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For further details see the cover story on page 2



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COMING UP ...

September 1996 - Focus on
Education and Training

November 1996 - Focus on
the Dairy Industry

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5th of the month of publication

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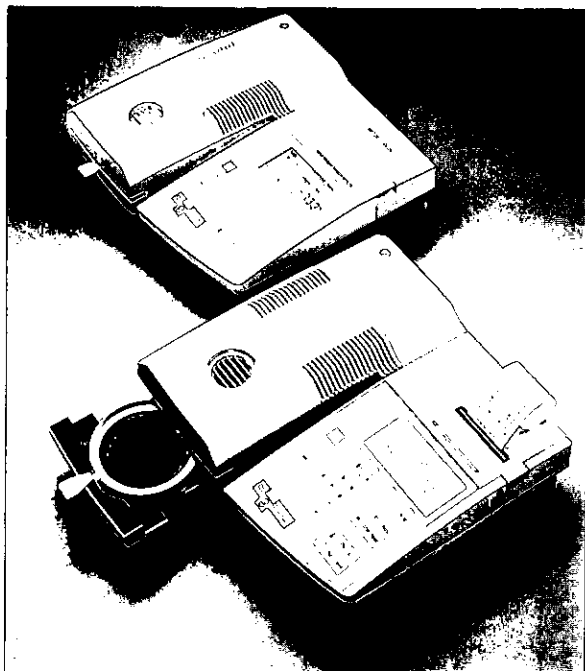
a separate measured value journal and measured value statistics for each type. The adjustment of the balance and dryer ensures that exactly the same measured value is obtained anywhere in the world under a wide range of environmental conditions. These features combined with four temperature programming possibilities are testimony to a product unparalleled in its class.

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Above: The Mettler-Toledo Halogen Moisture Analysers

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CYCLOTHERM™: A NEW DEVICE FOR CARRYING OUT SIMULTANEOUS EVAPORATION AND CONDENSATION

Allick R Lal, Shaka Scientific Limited, P O Box 87-071, Meadowbank, Auckland

Water and energy are valuable natural resources that are consumed in considerable quantities in chemical research and industry. A large portion of these resources are used in heating and cooling processes such as distillation, reflux, solvent extraction and purification, whereby energy is expended to heat the liquid to boiling and water is used to condense the vapour.

Resistive heating is approximately 90% efficient, and the electrical energy, once expended, cannot be fully recovered unless the heat of condensation can be converted to electrical energy for further resistive heating. An alternative approach is to use a heat pump as the driving force.

The operation of a heat pump involves the use of work (W) to raise or lower the heat of a fluid from the initial temperature (T_0) to a higher temperature (T_h), or to a lower temperature (T_c), given by the equations:

$$W + Q_0 = Q_c \quad \text{for the cooling process}$$

$$W + Q_0 = Q_h \quad \text{for the heating process}$$

where W = work done
 Q_0 = initial heat content of fluid at T_0
 Q_c = heat content of fluid at lower temperature T_c
 Q_h = heat content of fluid at higher temperature T_h

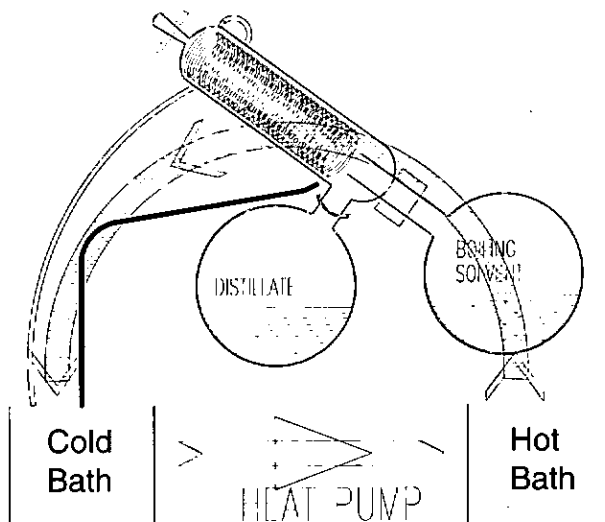
The respective coefficients of performance (C.O.P.) of a heat pump are defined as:

$$(C.O.P.)_c = Q_c/W = Q_c/Q_c - Q_0 \quad (\text{for cooling})$$

$$(C.O.P.)_h = Q_h/W = Q_h/Q_h - Q_0 \quad (\text{for heating})$$

It can be seen that the C.O.P. values are greater than 1. Commercial heat pumps have C.O.P. values in the range of 1.5 - 5. If one was to recover the latent heat of condensation from the vapour, this would reduce the work done, and thus a value of C.O.P. as high as 20/1 is achievable.

CYCLOTHERM (N.Z Patent Application No. 270102, 12/94; International PCT Application No. PCT/NZ95/00129, 12/95) is a multi-tasking chemical laboratory workstation, based around a heat transfer double bath driven by a dual circuit heat pump, whereby heat is transferred from one bath (B_c) to the other bath (B_h). Water acts as a suitable fluid medium, as it is cheap, non-toxic, and has a high heat capacity in comparison to common laboratory solvents. *The fluid in the hot bath heats the solvent to evaporation; the fluid in the cold bath condenses the vapour; the temperature of the cold bath is elevated, thus reducing the work required to pump heat energy back into the hot bath.*



The double bath can be utilised for processes such as rotary evaporation (with aspirator pump in the cold bath), distillation, reflux, Soxhlet extraction, solvent purification and recovery, and any other process where simultaneous heating and cooling is required. In the energy recovery mode, the C.O.P. can be as high as 20, this equates to a 50 Watt input for 1 kW of work done.

In a non-heat-recovery mode (open loop), the baths can be used for constant temperature experiments, equipment temperature control such as in a flow cell spectrophotometer, compound recrystallisation, and other laboratory processes.

The strength of *CYCLOTHERM* lies in the versatility of the instrument. It can accomplish a multitude of tasks (maximum temperature range: -10 °C - ambient - +75 °C) with significant electrical energy savings. In addition, the self-contained service water implies that no plumbing is necessary. Furthermore, the cold bath will accept a water aspirator pump for supply of vacuum for vacuum distillation, such as with a rotary evaporator. By using service water of 0 °C - 5 °C, the vapour pressure of water is minimised so that the aspirator can perform under optimum conditions. Of significance is that the temperature of the two waterbaths can be independently controlled, depending on the energy balance of the system. The 316 stainless steel/polypropylene construction of the wetted parts ensures that alternative bath fluids can be used. The prototype development of the *CYCLOTHERM Distiller* for bulk purification of solvents is currently in progress, for batch processing under vacuum, or continuous operation under atmospheric conditions.

* * * * *

Editorial

Proud to be a chemist ... but are we relevant?



With the debate raging on the future direction of the New Zealand Institute of Chemistry, one is tempted to take the selfish approach and say, "How does it effect me personally?" This brings to mind three reasons that are commonly given for not joining the NZIC and which are at the heart of the sole-searching that the Review Committee and NZIC Council are currently going through; these are:

- (I) The membership fee is too high.
- (II) What do I get out of it? – "What's in it for me?"
- (III) Chemistry isn't really relevant to my current job.

Reason (I), as anyone who makes a living selling things knows, is just a smoke-screen in most cases. It's the easiest thing to hide the real reason for not buying behind, and when dealing with a weak salesperson is usually the "arrow through the heart". A good salesperson sees this objection for what it is – a false objection – and uses it to probe further for the real obstacle in the way of a successful sale.

Reason (II), "What's in it for me?" is really the objection behind reason (I). It's the question which the NZIC must answer with services and facilities which result in benefits to the individual members and is actually about giving "value for money". The correct responses to (II) are complex, involve different things to different people and are at the crux of the task that the NZIC Council is currently wrestling with. Much discussion at Branch and Council level has taken place and Nath Pritchard discussed this issue briefly in *Chemistry in New Zealand* Vol. 59 No. 6 (November 1995) page 42.

Very little has been said, however, about reason (III), so let me explore this issue further.

Firstly, what is chemistry, and where did we start out? To answer this I've taken the 90s approach and consulted my computer (forget dictionaries and encyclopaedias – that's history!). The following two extracts come via Bill Gates (considered by some to have reached god status) and Microsoft Corporation (©Microsoft Encarta 95):

Alchemy, ancient art practised especially in the Middle Ages, devoted chiefly to discovering a substance that would transmute the more common metals into gold or silver and to finding a means of indefinitely prolonging human life. Although its purposes and techniques were dubious and often illusory, alchemy was in many ways the predecessor of modern science, especially the science of chemistry.

Chemistry, the study of the composition, structure, and properties of material substances, of the interactions between them, and of the effects on them of the addition or removal of energy in any of its several forms. From the earliest recorded times, humans have observed chemical changes and have speculated as to their causes. By following the history of these observations and speculations, the gradual evolution of the ideas and concepts that have led to the modern science of chemistry can be traced.

Reading the above description of alchemy, one could easily be forgiven for thinking,

- (i) What's really changed?
- (ii) So 99% of the population are (al)chemists?

After all, most of us spend the greater part of our lives trying to produce copious quantities of gold (money). Many of us spend hours and hours in gyms, or running, and eat healthily, take vitamins, apply face creams, hair tonics etc. etc. to slow down the effects of aging and prolong our lives. Worse, some of these techniques are dubious and illusory!

So have things really changed that much? – It's obvious that the basic ideals of chemistry (and even alchemy) are still relevant in the 90s and will continue to be well beyond the year 2000. It's the tools of our trade that are changing. Now it's possible to simulate chemical reactions, create chemical structures and even simulate instrumental analyses without leaving your desk, thanks to the computer – the modern chemist's reaction vessel. Fundamental to the computer and the amazing microchip is chemistry.

I know people who trained as chemists, were even active members of the NZIC, but ended up as accountants! What relevance does chemistry have to them now you could be tempted to ask. A good question; consider this scenario: Suppose you, as the accountant, are about to pay the account for the supply of a manufacturing raw material to your company. Let's suppose the order was raised by your purchasing officer (who isn't a chemist, by the way) and was for 5 tonne of copper sulfate. The invoice reads, "For supply of 5 tonne of Copper Sulfate ($\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$)". Who but a chemist would know that you're paying for nearly 1¾ tonne of water!!

A light-hearted example perhaps, but it does illustrate the point that chemistry has a relevance (however small) to almost every occupation. Take time to reflect on the relevance of chemistry to your own career and to the careers of your colleagues and friends, especially those who are not currently, or have never been, NZIC members.

I leave you with the following thought-provoking extract courtesy of Microsoft. Be proud to be a chemist. No profession is more relevant or important to the future of our world

Robert B Lyon
Managing Editor

Chemistry and Society

Chemistry has had an enormous influence on human life. In earlier periods chemical techniques were used to isolate useful natural products and to find new ways to employ them. In the 19th century techniques were developed for synthesizing completely new substances that were either better than the natural ones or could completely replace them more cheaply. As the complexity of synthesized compounds increased, wholly new materials with novel uses began to appear. Plastics and new textiles were developed, and new drugs conquered whole classes of disease. At the same time, what had been entirely separate sciences began to be drawn together. Physicists, biologists, and geologists had developed their own techniques and ways of looking at

the world, but now it became evident that each science, in its own way, was the study of matter and its changes. Chemistry lay at the base of each of them. The resulting formation of such interscientific disciplines as geochemistry or biochemistry has stimulated all of the parent sciences.

The progress of science in recent years has been spectacular, although the benefits of this progress have not been without some corresponding liabilities. The most obvious dangers come from radioactive materials, with their potential for producing cancers in exposed individuals and mutations in their children. It has also become apparent that the accumulation in plant and animal cells of pesticides once thought harmless, or of by-products from manufacturing processes often have damaging effects. These dangerous materials have been manufactured in enormous amounts and dispersed widely, and it has become the task of chemistry to discover the means by which these substances can be rendered harmless. This is one of the greatest challenges science will have to meet.



Drawing by Dr Jeremy Burgess, courtesy of Microsoft Corporation

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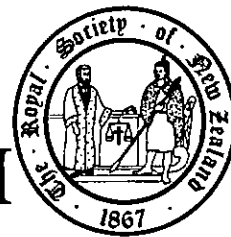


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GOLD MEDAL TO BILL DENNY AND TEAM



On Thursday 20 June 1996, at a function held at Old Government House, the University of Auckland, Professor Bill Denny, Intermediate Past-President of the NZIC, and his team from the Auckland Cancer Research Laboratory were presented with the New Zealand Science & Technology Gold Medal.

The function was hosted by Professor Neil Curtis (Chairman of the Royal Society Council) and Professor Sir John Scott

(Deputy President and President-Elect of the Academy Council). The award was presented to Bill Denny by The Governor-General His Excellency Sir Michael Hardie Boys who is Patron of the Royal Society.

Among invited guests who shared the presentation with Bill Denny, and his staff and family were a number of NZIC members, including the President Nath Pritchard.

CITATION

Professor William A Denny and the Auckland Cancer Research Laboratory

For sustained innovation in the development of new anticancer drugs, including important contributions to design, synthesis, evaluation and mechanisms of action, resulting in new fundamental knowledge about inhibitors of topoisomerases and tyrosine kinases, activators of tumour necrosis factor, hypoxia-selective cytotoxins and DNA alkylating agents as anticancer drugs; further resulting in the introduction of four new compounds into clinical treatment, and the formation in Auckland of a leading international academic centre in anticancer drug development, to provide opportunities for research-based teaching and student training.



Above: Bill Denny receives the gold medal from the Governor-General Sir Michael Hardie Boys

New Zealand Science & Technology Medals

For the recognition of excellence in science and technology

The medals were instituted by The Royal Society of New Zealand at the request of the Government to recognise and honour those who have made exceptional contributions to New Zealand society and culture through activities in the broad fields of science and technology.

The medals have a head of Lord Rutherford of Nelson (see above) on the obverse and the emblem of the The Royal Society of New Zealand on the reverse.

A Science & Technology Gold Medal will be awarded to recognise eminent research by a person or group in any field of science or technology. To qualify, the research will need to be recognised internationally as significantly advancing understanding of the field. In addition, the medallist will have made a substantial contribution to public awareness, knowledge and understanding of the field concerned.

Science & Technology Medals will be awarded to persons or groups for conspicuous, continuing contributions to science and technology over an extended period, or for an outstanding specific contribution to the advancement of science and technology.

Nominations close on 16 August for 1996 medal awards. Nomination forms can be obtained from the NZIC Secretariat. Nominations may be made by recognised scientific, educational and research institutions and by any member of The Royal Society of New Zealand.

Any person may be nominated as long as he or she meets the requirements set out below.

1. In the nominations for the Gold Medal, the Royal Society will be looking for people of distinction who stand in high public esteem. A gold medalist will have exceptional achievements within their scientific discipline and have made a significant contribution to the public awareness of research, science and technology in the wider community. This requires more than purely scientific achievement.

2. In the nominations for the Science & Technology Medal the Royal Society will be looking for career role models. The medals will honour men and women who have made either conspicuous long term contributions to scientific organisations, to public awareness of science, to science education, to industry, or to the advancement of science in any other way, or have

made a single exceptional contribution to their field of science or technology. In all these "science" is to be taken as embracing science and technology in the wide context. The number of medals is not defined, but medals shall be awarded only if nominees reach the required high standards.

Nominees in both categories will normally be expected to be living and working in New Zealand, but people living overseas

with strong New Zealand connections, either personally or through their work, will also be eligible.

Further information may be obtained from:
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The Royal Society of New Zealand
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Email: awards@rsnz.govt.nz

PROFESSOR DIGBY MACDONALD: SCIENTIST "ON ANOTHER STAGE"

Professor Digby Macdonald still remembers the day he decided to become a scientist: "My father took me out into the paddock to see Sputnik, and that was when I made my decision." He was 14 at the time.

The New Zealand-born, farm-raised boy was one of only two non-Canadians to be elected a member of the Royal Society of Canada this year, he is a member of the Scientific Advisory Board of the US Air Force, and is an academic leader in his field.

He also holds the prestigious W B Lewis lecture award of Atomic Energy of Canada, only the sixth person ever to receive this award (one of the others was a Nobel laureate).

Professor Macdonald, who is now Professor of Materials Science and Engineering and Director of the Centre for Advanced Materials at the Pennsylvania State University, USA, was a visiting Professor at the University of Auckland in May - June 1996. His field is electrochemistry, with applications to passivation, materials science, corrosion control and high temperature technology.

North America-based since 1966, Professor Macdonald is an Auckland graduate who has been back a number of times and views New Zealand's increasing cosmopolitanism very positively: "Now, when you go out in the university quad, you hear half a dozen different languages. When I was a student you didn't even hear Maori. Personally I think the increasing cosmopolitanism is a tremendous development for New Zealand because it is so far away."

The most dramatic change he has noted has been the greater research consciousness of New Zealand business. "Anyone who has been overseas and seen the resources that go into research would agree that New Zealand should do this too. Now we are seeing a recognition on the part of New Zealand business that indigenous research is needed, rather than importing research."

Professor Macdonald grew up on a farm at Reporoa. His mother was a local schoolteacher. "I learnt a couple of things as a New Zealander," he admits. One was about building his own house, which he proceeded to do when he got to California. "It got me into the local paper there," he laughs.

He went abroad after completing his masters degree at the University of Auckland "because I got itchy feet. I decided to

go to Canada to do my PhD. I went to the University of Calgary which had just broken away from the University of Alberta, and did chemistry."

"After I graduated the job situation was bleak - much bleaker than nowadays. The only job was in developing nuclear reactors." He has been in nuclear reactors ever since, and over the past twenty years believes he has "made significant contributions." Despite his many years out of the country he doesn't feel he has deserted New Zealand in any way: "I'm just playing on a different stage," he says. "It is the view of many New Zealanders that one of the things this country has produced in abundance has been talented people. One of its principle exports has been educated people. If we recognise the contribution we have made to the world economy we shouldn't feel so bad if we don't come back."



Professor Digby Macdonald (seated left), with Professor Myrna Urquidi-Macdonald, his wife, and (standing, from left to right) Associate Professor Graham Wright, Paul Kilmartin and Tony Betts, of the Department of Chemistry, University of Auckland.

"Over the past years I've developed the view that science transcends political boundaries, that science is conducted for the benefit of mankind." The fact that his contribution to this worldwide benefit has been in North America doesn't reduce his love for New Zealand in any way. He draws a parallel to another area of high achievement, that of music: "That Kiri te Kanawa doesn't come back doesn't mean that she has lost her love for New Zealand."



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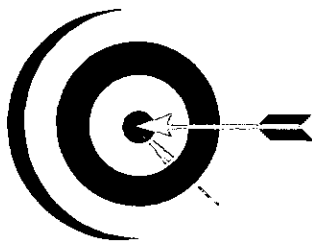
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By the way, he adds, "New Zealand has a wonderful reputation in the US. Geez, that's a country I'd like to go to, they say. I think that's something New Zealand should cultivate. New Zealand is an outstanding citizen of the world community. In the long term that is worth more than all the butter and lamb."

**"CNN-EFFECT" TRANSFORMING
MILITARY AVIATION**

Worldwide military aviation is facing dramatic changes, according to Professor Digby Macdonald. As a member of the Scientific Advisory Board of the US Air Force, he headed one of twelve teams conducting a study entitled New World Vistas.

The collapse of the Soviet Union, the reluctance of other countries to accept US military bases overseas, a whole host of new technologies and the impact of the news broadcaster CNN are all factors which will completely change air force activities in the future, he says.

"One of the biggest impacts," he says, "has come from the development of CNN. We call it the CNN-effect. CNN has brought armed conflict into the living rooms of every family on earth.

"This has resulted in a need to minimise collateral damage. For instance, the bombing of schools, churches and hospitals is no longer acceptable." This is necessitating the development of high-precision weapons, he explains: "We're in the infancy of that, but at least it will make warfare less costly for the civil population.

"Take the STEALTH fighter with its precision weapons. STEALTH is just as effective as a whole squadron of B52s, which not only take out the target but everything around it too.

"What has now become the weak link," he continues, "is the pilot." That is because of their ability, or inability, to withstand G-forces. For this reason a plane with a pilot can never outmanoeuvre a missile: "The one who fires the missile wins," he says "This means that air forces of the future, front-line aircraft will be uninhabited vehicles."

Another reason for the dramatic change in military aviation has been the collapse of the Soviet Union: "There is no longer a single enemy with well-known tactics and systems. In the next 50 years we will see a situation where multiple low-level conflicts require air power of a different form."

Also, there is an increasing reluctance on the part of other countries to accept US military bases: the US is under pressure from the Philippines, for example, to move out its bases. In addition, it is becoming increasingly difficult to obtain permission to overfly other territories. All these factors will necessitate super long-range aircraft.

As Professor Macdonald points out, the consequences of all these developments "are immense for the whole world, and especially for New Zealand."

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University of Auckland News

Patent Proze

by Jane Calvert and Greg Lynch

INTRODUCTION

We wish to introduce readers to "Patent Proze". It is planned that this "column" will become a regular feature of *Chemistry in New Zealand*.

With the drive for an increased commercial focus to scientific research in New Zealand, there is a greater emphasis on the protection of technological developments from their wrongful exploitation. Increasingly, research funders are looking for tangible outputs from the research they are funding. At one time scientific publications would suffice but scientists and science managers are becoming more attuned to the notion "Patent or Perish" rather than the old adage "Publish or Perish".

This growing awareness of the need to protect research and development results means chemists generally are seeking information regarding aspects of both local and international patent law and procedure. The purpose of "Patent Proze" is to provide readers with information in this area which may be of interest to scientists, particularly research and development chemists.

It is also envisaged that "Patent Proze" will answer any queries you as readers may have. If you have questions you wish answered in "Patent Proze" please direct them to "Patent Proze", Baldwin, Son & Carey, P O Box 852, Wellington (Email: baldwinsnz@bscwlg.baldwins.co.nz).

We begin with a brief outline of the rationale behind the patent system.

THE PATENT SYSTEM

The objectives of the patent system are to encourage invention, innovation and growth in industries. Ultimately this leads to the growth and development of economies. How does the patent system achieve this?

If an inventor develops a novel and useful idea a patent application may be filed at the New Zealand Patent Office. Should the invention and application fulfil the requirements of the Patent Act a patent will be issued granting exclusive rights to the patentee for a period of 20 years.

The justification of the patent system is that it provides an incentive for investment in new ideas. Without the patent system, no one would be willing to invest in research and development since an imitator would be able to copy a new product as soon as it reached the market. In the chemical industries this is emphasised by the ever vigilant generic manufacturers.

The system is said to have evolved from a "social contract" between the Crown on the one hand and an inventor on the other. That is, if an inventor discloses to the public his or her invention in a patent application, the Crown will grant to the inventor a monopoly in that invention for a fixed period. Thus technology advances since inventions are less likely to be kept secret and at the same time inventors enjoy a monopoly during which time they are able to recover research and development costs and make a profit. With a system that encourages invention, consumers benefit with new and improved products which may enhance the standard of living and undoubtedly enhance the economy.



Jane Calvert

Jane Calvert and Greg Lynch are both employed in the patent department of Baldwin Son and Carey, Patent and Trademark Attorneys, and Solicitors, where they specialise in chemistry patents. Jane joined Baldwins after completing a PhD in chemistry at Canterbury University in 1994. Greg also joined Baldwins in 1994 after three years research at Industrial Research Ltd in Wellington. Following completion of a PhD in chemistry at the University of Otago in 1989, he spent a two year period as a post doctoral researcher at Oxford University.



Greg Lynch

In the next issue of *Chemistry in New Zealand*, we plan to include some information regarding the New Zealand Patent Office.

BUDGET 1996

AN OVERVIEW OF ALL PUBLIC INVESTMENT IN SCIENCE

The Government's commitment to increasing "public investment in science" is being developed further, in a strategic statement known as *RS&T:2010*. This strategy considers the broad boundaries of Government's overall investment in science and technology.

The portfolio "Research, Science and Technology" (RS&T) is not the only Vote through which science is funded by the Government. The total public investment is being considered as a "Science envelope", which includes investment through other Votes. The increases in science expenditure will be allocated through this envelope.

The total investment in science comprises:

The whole of Vote RS&T

- The costs of research performed in the Universities and funded through Vote Education
- The whole allocation to the Health Research Council, funded through Vote Health
- Research carried out or funded in Government departments through their own votes and to support departmental functions (operational research).

Taking a cross-portfolio approach to investment in RS&T will require priorities to be established at high level. It is intended to initially consider priorities in terms of the following major categories of investment:

- Public good science and technology (strategic and non-prioritised programmes)
- Practical application (with technology-linked programmes and operational research by departments considered separately)
- Underpinning services (including especially management of the science investment)

Total public investment in 1996/97 is approximately \$520 million (including GST), which is about 0.56% GDP.

Future increases in the investment will not be restricted to Vote RS&T. From 1997/98, the increase will incorporate allocations to other Votes, particularly for operational research. Details on these allocations are not yet available

SUMMARY OF 1996/97 BUDGET ANNOUNCEMENTS

Public funding of science and technology will continue to increase in 1996/97 as part of the Government's commitment to lift public investment in science to 0.8 per cent of GDP by the year 2010. Continuing the pattern of previous Budgets, this Budget includes commitments for a three-year period, including a funding increase of \$40 million for 1998/99, following the increases of \$15 million for 1996/97 and \$45 million for 1997/98 announced in previous Budgets.

Details of the distribution of the investment are available for only the immediate year ahead, 1996/97. The overall increase is \$15 million but the detailed changes include fiscally neutral adjustments between some parts of the Science Vote. The major part of the increase (\$10 million) goes to the Public Good Science Fund, bringing the value of Government's major science investment to \$267.7 million. Following a revision last year of the priorities for this funding for strategic science, most of this increase will be allocated for new science on the environment, manufacturing, forestry and fisheries.

The Marsden Fund, for supporting excellent research and researchers, regardless of whether or not the research contributes to the Government's socioeconomic priorities, will increase by more than \$5 million, to \$10.8 million in 1996/97. Government is already committed to increasing this Fund to \$22 million in 1997/98, and eventually to 10% of the value of the PGSF.

Almost \$500,000 has been allocated for new fellowships. A new scheme, to be known as the Maori Fellowships scheme, will support up to 20 fellowships for Maori postgraduate researchers, to develop role models for Maori in science. Additional funding will double the number of James Cook Fellowships, from two to four, for high profile scientists.

Other changes include an increase of \$175,000 for enhancing the research supporting New Zealand's National Measurement Standards, and an increase of \$100,000 for establishing new coordinating arrangements for some science areas.

As the size and complexity of the science investment increase, so do the level and intensity of management of this investment. This is reflected in an increase of approximately \$1.3 million for contract and investment management. A part of this increase will be allocated to developing a programme for evaluating the economic benefits and outcomes from the Government's overall science investment.

New Appropriations

A new **Promotion of Science and Technology Non-DOC** will bring together funding previously distributed through the BUE provision for science promotion, promotional activities of the Royal Society of New Zealand, which were formerly classified within the Advancement of Science Non-DOC, and the James Cook Fellowships, previously contained in the fellowships BUE, which are aimed at promoting role models in science.

A new **International Science and Technology Linkages Non-DOC** will bring together a number of programmes that provide outputs which enhance New Zealand's science and technology linkages. Existing programmes being brought together include the BUE provision for international science linkages and relevant activities of The Royal Society of New Zealand which were formerly classified within the Advancement of Science Non-DOC.

A new **Human Resources Non-DOC** will contain the New Zealand Science and Technology Post-Doctoral Fellowships Scheme, which was formerly an element of the BUE for Science and Technology Fellowships.

THE PUBLIC GOOD SCIENCE FUND AND NON-SPECIFIC OUTPUT FUNDING

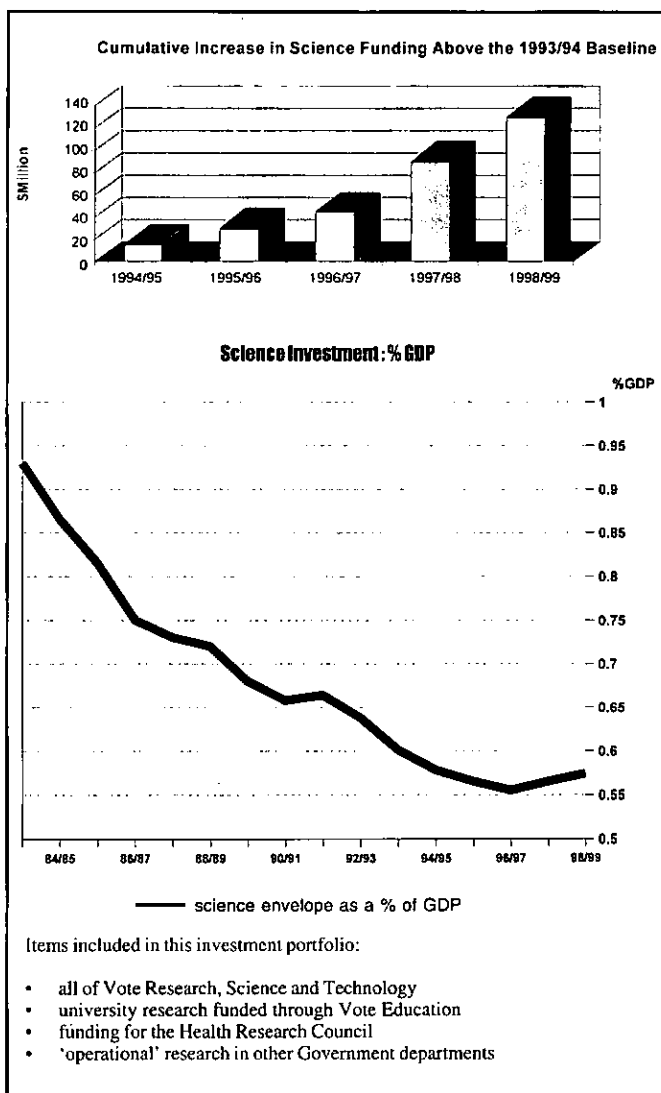
Public Good Science Fund

The Public Good Science Fund (PGSF) is the Government's major investment in strategic science and technology. The PGSF will increase by \$10 million in 1996/97 to a new level of \$267.7 million. This level of increase will maintain the forward funding profile for the PGSF almost exactly on the "benchmark" profile set out in the Government Statement of 28 June 1995. The benchmark profile is based on achieving a total PGSF investment of \$330 million in the year 2000/01.

While firm levels of increase in 1997/98 and 1998/99 are not being announced immediately, the PGSF will continue to take a significant share of the increases of \$45 million and \$40 million announced for those years. The absolute size of this investment recognises the crucial role of science and technology in underpinning sustainable economic growth, a cohesive society, and the protection and management of our environment.

The PGSF is allocated through a contestable bidding system, and is used for the purchase of research, development, scientific services and technology transfer. The allocation of funds is guided by priorities which are determined by the Government after a widely consultative process, involving both scientists and end-users. Priorities are expressed by setting 5-year funding targets for broad areas to which the research, scientific services and technology are expected to contribute.

From 1996/97, a revised framework of 17 research areas will apply. These areas (or outputs) were defined in the Government Statement of 28 June 1995. The distribution of the PGSF across these 17 outputs is expected by the Foundation for Research, Science and Technology (FRST) to be as shown in the table attached. It is noted that year by year output funding levels are to a large degree set at the discretion of FRST. The principal constraint is that they should represent consistent progress



STRUCTURING THE SCIENCE VOTE

From 1996/97, all of the Government's investment made through Vote RS&T will be used to purchase outputs, rather than provided in the form of untied grants. In technical terms, this represents a move from previous years when several funding schemes (such as most kinds of fellowships) were regarded as "benefits and other unrequited expenses" or BUEs, to the expression of funding as "non-departmental output classes", or Non-DOCs. The change better reflects the Government's view that these schemes and programmes are investments that will contribute directly (and measurably) to national goals. Funding has also been rationalised by grouping together schemes with related objectives. Some of the main changes are listed below.

Promotion of Technology for Business Growth

This existing appropriation has been expanded by drawing in other programmes having the common goal of promoting technology uptake and innovation as essential elements of competitive strategy in enterprise. Programmes added to the appropriation are the Graduates in Industry Fellowships scheme, formerly provided through the BUE for Science and Technology Fellowships, and the two schemes formerly classified within the Non-DOC for Technology Uptake and Innovation in Enterprise - TechStart and Visiting Technologists.

Area to which science and technology is to contribute	1996/1997 Funding \$ millions
Animal industries	36.6
Dairy industries	12.3
Forage	20.6
Horticulture, arable and other food and beverage industries	51.3
Forestry and forest product industries	22.5
Fisheries and aquaculture industries	6.6
Manufacturing industries and industrial technologies	28.8
Tourism, commercial and other services	0.8
Information and communications networks and services	2.4
Construction	4.3
Energy	5.2
Transport and distribution systems	1.1
Society and culture	5.9
Earth resources and processes	15.1
Land and freshwater ecosystems	31.0
Marine environments, climate and atmosphere	21.1
Antarctic research	2.0
TOTAL	267.7

toward achieving the "benchmark" targets set by the Government for the year 2000/01.

Nonspecific Output Funding

In 1996/97, \$24.7 million will be allocated directly to Crown Research Institutes as Non-specific Output Funding (NSOF). This funding is allocated as a percentage of the funds allocated from the Public Good Science Fund to each institute. NSOF is applied for public good science and technology projects which are not subject to the Government's priorities. In selecting the projects to which this funding is applied, the Crown Research Institutes are able to manage flexibly and effectively their total portfolio of public good science and technology.

MARSDEN FUND

It was announced last year that the Marsden Fund for unprioritised science would rise to \$11 million in 1996/97 and then to \$22 million in 1997/98. These increases, with minor technical adjustments, are reconfirmed. The Marsden Fund is the one part of the Government's science investment portfolio which will be kept aside from the review of allocations which will occur as a part of implementing the science envelope process for 1997/98.

It also remains the Government's intention to progressively increase the Marsden Fund, and then maintain it, to a level of 10% of the Public Good Science Fund.

The Marsden Fund is for the support of scientific and technological research which is characterized by excellence, irrespective of topic or science area. Because of the twin focus on excellence and research, and in recognition of the artificiality of many of barriers between the academic disciplines, it has been decided to include research in the humanities in the Marsden Fund from the 1997/98 year. It is stressed, however, that this extension will strictly apply to research and not to scholarship unrelated to research.

Research in the humanities has previously not been included within either the Marsden Fund or the Public Good Science Fund, which are the main elements of the "science" funding system. They have been resourced almost entirely through Vote Education funding to Universities. The Minister of Education and the Minister of Research, Science and Technology share the view that the humanities also fit comfortably within the Marsden Fund, with its primary focus on excellence in the advancement of knowledge. Given the significant increases in funding that have been agreed for the Marsden Fund for the next few years, some of this investment can now be directed towards work in the humanities.

THE PROMOTION OF SCIENCE AND TECHNOLOGY: NEW FELLOWSHIPS ANNOUNCED

An important element in the funding for the promotion of science and technology and science and technology education, is the support of fellowships which enable role models to be recognised

and publicised. A new fellowship programme is to be launched in 1996/97 and an existing programme enhanced.

New Science and Technology Fellowships for Maori

A new programme of Maori Science and Technology Fellowships will commence in 1996/97. The objectives of the programme are to develop and promote Maori role models in science, technology and engineering research, by providing fellowships for suitably-qualified Maori students to undertake postgraduate research. As an important part of the programme, fellows will take part in activities designed to promote to young Maori and their parents the value of science, technology and engineering qualifications.

Funding of \$300,000 will be available for Maori Science and Technology Fellowships in 1996/97. The fellowships will be administered by the Foundation for Research, Science and Technology.

Expansion of James Cook Fellowships

Two new James Cook Fellowships will be offered in 1996/97, bringing the total number of fellowships to four.

The prestigious James Cook Fellowships are awarded annually to senior researchers who have achieved sustained excellence in their respective fields. One of the fellowships is offered exclusively in the social sciences, as a continuation of the intentions of the Hodge Fellowship - an earlier award which was subsumed into the scheme. The other fellowships are to span a range of other disciplines. The Royal Society of New Zealand administers the scheme.

Funding for the James Cooks Fellowships will double from \$180,000 in 1995/96 to \$360,000 in 1996/97.

CO-ORDINATION OF SCIENCE

The need to ensure the adequate co-ordination of areas of science of national importance has been recognised by the Government as an integral part of the reform of science. National Science Strategies (NSS) provide one framework for the co-ordination of science on topics designated by the Government to be of national importance, but other means of co-ordination are adopted as well, such as the commissioning of reports on research co-ordination needs for specific topic areas.

At present there are National Science Strategies for the Control of Possums and the Threat of Bovine Tuberculosis, and for Climate Change. The Government is currently considering the need for a formal NSS for Sustainable Land Management. For each NSS topic, the Minister of Research, Science and Technology appoints a Committee to develop strategies for providing advice on research priorities and overall levels of funding. Their activities include facilitating the co-ordination of research through publications and by holding workshops. The NSS Committees are responsible to the Minister and report annually on the state of research activity and developments in the topic area.

Investigations have been made of possible new topics for the NSS status, including marine research in New Zealand's

Exclusive Economic Zone and biodiversity. Their adoption will be considered in 1996/97. A major exercise has commenced, identifying key gaps, opportunities and capabilities in New Zealand's science knowledge base. This will be completed to a first stage in 1996/97, but will be continued in future years.

The Budget provides \$400,000 for the 1996/97 year, \$100,000 more than 1995/96, for external support for the co-ordination of science, including NSS Committees and activities, the investigation of new topics and analysis of issues identified in the knowledge base exercise.

Some additional funding will also be provided in 1996/97 to support the activities of an officials committee which has been tasked with improving the coordination of research aimed at supporting the development of social policy. The establishment of this committee is one outcome of the Government's consideration of the Hawke committee review of applied social science capacity in New Zealand.

MANAGEMENT AND EVALUATION OF THE SCIENCE INVESTMENT

As the size and complexity of the overall science investment increase, the costs of managing this investment also increase. Work on the effective management of the Government's investment in science has been growing steadily. In 1996/97, a further \$1.3 million is allocated to accommodate the increased level and intensity of effort required.

With the increasing size of the Public Good Science Fund and the Marsden Fund, and increased activity in some technology programmes the associated costs of contract management are increasing. Funding for the purchase agents responsible for these investments, the Foundation for Research, Science and Technology and the Royal Society of New Zealand respectively, will accordingly increase by approximately \$1.1 million.

As the Government develops a cross-portfolio approach to its science investment, there is a need to integrate expenditure in different Votes. While such integration is important for the Government to achieve the strategic outcomes it is seeking, there will be some increased expenditure for implementing this management approach.

Following extensive reforms of the science system, there is now a need to ensure that outcomes required by the Government are delivered cost-effectively. A programme of evaluating the benefits of public investment in science is now being developed, and additional funding of \$200,000 has been allocated for this programme. A better understanding of these benefits will support future decisions on science investment. This additional funding will be allocated to the Ministry of Research, Science and Technology, but compliments the use of a substantial proportion of existing funding (about \$1.6 million) which will be applied to contract management and evaluation by the Ministry in 1996/97.

The evaluation programme will focus in the first instance on the Public Good Science Fund, the largest single component of the Government's investment in science. However, evaluation will eventually be part of the management framework for all components of the overall investment.

* * * * *

22nd AUSTRALASIAN POLYMER SYMPOSIUM

University of Auckland, Auckland

2 - 5 February 1997

Background: in 1997 the Australian Polymer Symposium will be held outside Australia for the first time. The Conference is being jointly organized by the Institute of Materials at the University of Auckland and the Polymer Group of the New Zealand Institute of Chemistry, under the auspices of the RACI Polymer Division.

Venue: The Symposium is being held in the Conference Centre and adjoining Lecture Theatres at the University of Auckland. The University is located 200 m from the city centre and within walking distance of the recommended accommodation.

Accommodation: A wide range of accommodation is available for the Symposium from student hostel to international hotels. While the Conference Secretariat will manage hostel bookings, those staying in hotels will be need to reserve their own accommodation.

Travel/Social: The Symposium programme includes a trip to the West Coast gannet colony followed by an excellent dinner at a local vineyard. Numbers are limited; please confirm bookings where shown on the Registration Form.

SCIENTIFIC PROGRAM

As in the past, the Symposium will continue a general theme spanning the diverse specializations within Polymer Science and Technology. The scientific program will feature Plenary and Keynote lectures, and will be organized around a number of symposia topics, including (but not necessarily restricted to) the following:

- Synthesis
- Structure and Properties
- Natural Polymers
- Advanced Composites
- Polymers in Food and Packaging
- Polymers in Electronics and Optoelectronics
- Biomedical Applications of Polymers
- Rheology and Flow Modeling
- Polymers in the Environment
- Polymer Blends
- Coatings and Adhesion Technology
- Gels and Networks
- Characterization
- Theory and Simulation

Plenary Lecturers: Professor Drying Klaus Friedrich, Research Director at the Institute of Composite Materials University of Kaiserslautern, Germany.

Professor Mitsuo Sawamoto, from Kyoto University, Japan. A world leader in properties of star polymers.

Professor Robert Silbey, from the Massachusetts Institute of Technology, whose research specialises in the basics of conducting polymers.

In addition, keynote speakers will provide additional focus to the afternoon sessions of the Symposium.

Papers and Posters: Papers are invited on any aspect of Polymer Science and Technology. Twenty minutes will be allowed for verbal presentations. Posters will be displayed for the duration of the Symposium, but authors are expected to be present at the scheduled poster session to discuss their contributions. Abstracts of papers and posters will be published for the Symposium. Authors must submit abstracts no later than September 1st, 1996. Abstracts may be up to two A4 pages in length with 2.5 cm margins; a hard copy is required and if possible a file on disk should also be supplied.

Workshop: A Workshop will be held on Sunday 2nd February 1997 in the Chemistry Department and School of Engineering at The University of Auckland, and will focus on analytical and mechanical testing techniques relevant to polymeric materials.

The Treloar Prize: The Treloar Prize(s) will be awarded for the best verbal and/or poster presentation by a bonafide full-time student. Deadline for nomination is November 1st, 1996.

CONFERENCE INFORMATION:

Registration: The Registration desk will be located in the Conference Centre at 22 Symonds Street, Auckland.

Sessions: All scientific sessions will be held in the Conference Centre and adjoining Lecture Theatres.

Catering: In keeping with a trend at recent international meetings, breakfasts have been included as an integral part of the Symposium and are covered by the registration fee. This will provide an additional opportunity for meeting delegates plus allow those travelling within Auckland to avoid rush-hour traffic.

Morning and afternoon teas and lunches (also covered by the registration fee) will be served in the Conference Centre.

Accommodation: Accommodation may be booked on the enrolment form for O'Rorke Hall, a quality Student Hostel at 16 Mount Street, close to the Conference Centre. The hostel offers single accommodation (although a limited number of double rooms may be available). The cost for bed and breakfast is \$NZ 54.00 per person per night. Please indicate your requirements on the attached Registration form. All other accommodation must be booked privately.

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The Graduate Programme in Wood Products and Pulping Chemistry: An Overview

Richard M Ede and Keith L Mackie

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Introduction

At the beginning of this year the Department of Chemistry, University of Waikato (UW) in conjunction with the New Zealand Forest Research Institute Ltd (FRI) began teaching a Graduate Programme in Wood Products and Pulping Chemistry. While a high-level relationship between FRI and UW has been formalised for some time by a Memorandum of Understanding, the graduate programme provides a more structured framework for the collaborative chemistry-based graduate and post-graduate study and research programmes which have been on-going between UW and various FRI divisions over the last 13 years. Additionally, two joint UW/FRI positions have been established, with Dr Richard Ede holding one of these positions based primarily at FRI, and Dr Merilyn Manley-Harris (formerly of the Shafizadeh Wood Chemistry Centre, University of Montana) taking up a reciprocal position based primarily at UW in August 1996.

Programme Rationale

There is a rapidly growing demand in the wood processing sector for graduates with an advanced knowledge of the properties of wood in general and radiata pine in particular. This demand is somewhat cyclical but the forestry sector in New Zealand is strategically well positioned internationally and continues to receive strong investment. While New Zealand has an on-going mechanism for the training of graduates with a knowledge of the growth and management of forests, there is a paucity of education in the field of what to do with the product afterwards. This is recognised by the sector as a whole and has been highlighted for attention. In the last few years there has been a substantial realignment of research effort at NZFRI into the field of adding value to the radiata pine resource. There is also a continuing investment in research into environmental aspects of wood processing. Both of these research areas rely heavily upon fundamental chemistry skills.

A number of factors influenced the decision to provide a formal graduate programme:

- there is no significant graduate-level teaching in wood chemistry available anywhere in the southern hemisphere by institutions with any track record in research in related areas.
- although employment opportunities in this area are currently limited, the industry is adopting a more value-added

processing philosophy, which should lead to increased employment opportunities for wood chemistry graduates.

- as a result of the expected staff turn-over in the next decade at FRI there will be a number of employment opportunities emerging for wood chemistry graduates.
- a formal qualification in wood products/pulping chemistry may be marketable in south-east Asian countries which are investing heavily in producing value-added wood products.

The Graduate Programme in Wood Products and Pulping Chemistry will thus produce two outcomes:

- fundamental research outputs in areas of relevance to FRI and the wood processing sector.
- graduates and post-graduates with strong backgrounds, skills and interests in wood processing.

Programme Structure

Given that there are currently limited opportunities for employment in the wood chemistry field both domestically and internationally, and that employment growth in this area will be quite slow, the cornerstone of the programme is *flexibility*. Graduates from the programme will emerge with a *bona fide* chemistry degree, with a major in organic chemistry (although other areas may be appropriate). The wood chemistry component of the degree will arise from an MSc-level course (Advanced Wood Chemistry), and an appropriate research project. If future enrolment numbers increase significantly, other courses may be offered. Additionally, there is scope for incorporating MSc-level courses from the UW Centre for Technology such as Wood Technology and Materials Science. While these courses are not yet offered as part of a formal programme, the synergistic relationship between the courses is obvious, and a joint programme will undoubtedly emerge in the future.

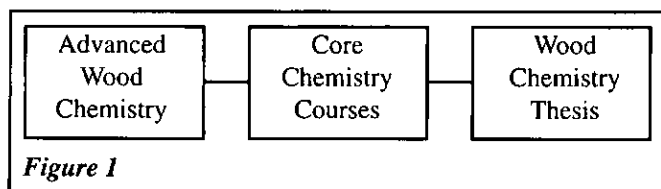
The MSc-level course Advanced Wood Chemistry provides the focus for the graduate programme. The course is taught as a series of selected topics, including:

- lignin biosynthesis, structure, characterisation, and reactions under alkaline/additive conditions.
- carbohydrate biosynthesis, structure, and reactions.
- wood extractives biosynthesis and chemical transformation.
- oxygen-based bleaching and delignification reactions.

The course is taught jointly by UW and FRI staff, and topics will vary from year to year. As in the case of all Chemistry MSc-level courses, the students are expected to carry out a

substantial amount of self-directed study in the topic areas, and the course is to be externally moderated.

The wood chemistry course is offered for the Diploma of Applied Science (DipAppSci),¹ MSc, and MSc(Technology)² degrees, and as a qualifying course for the MPhil degree. The remainder of the graduate programme is chosen from MSc-level chemistry papers (and/or appropriate undergraduate papers in the case of the DipAppSci). Courses from outside the Chemistry Department can be taken in consultation with the Chairperson and the programme co-ordinator. The generic programme structure is shown in Figure 1. The option of post-graduate wood chemistry study is also available, with a number of students having already graduated with doctorates in chemistry, with a thesis topic in wood chemistry (see Table 1 and Appendix).



Research Programme

An indication of the productivity of the relationship between the Chemistry Department and FRI can be gained from the numbers of jointly supervised theses and co-authored publications produced in the last 13 years (Table 1). The strength of the continuing relationship can be gauged from the numbers of research students currently engaged in joint research projects (Table 1, second row). A selection of thesis titles is given at the end of this article.

Table 1. Numbers of joint theses and publications produced 1983-1996, and current research students.

	MSc	MSc (Technology)	MPhil	DPhil	Publications
Past	4	7	-	4	16
Current	2	1	1	4	-

The areas of previous and current collaborative research include:

- environmental chemistry.
 - characterisation, fate and toxicity of mill effluent components.
- pulping and bleaching chemistry of lignin.
 - determination of lignin reactions occurring during kraft pulping and elemental chlorine-free (ECF) bleaching.

- new organometallic wood preservatives.
 - synthesis, characterisation and testing of targeted compounds.
- chemistry of the unit processes involved in medium-density fibreboard (MDF) production.
 - one component of a substantial PGSF/industry funded programme aimed at producing MDF panels with improved dimensional stability.
- chemical characterisation of *Pinus radiata*.
 - determination of relationship between wood quality and chemistry of the New Zealand plantation forest resource.
 - options for production of high-value chemical products from bark.

With the the Graduate Programme in Wood Products and Pulping Chemistry now established, the relationship between the Department of Chemistry and FRI has entered an exciting new phase. It is hoped that this programme will provide the foundation for the establishment of a joint centre of excellence in wood chemistry research and teaching, and that the programme will lead to the provision of new opportunities for students.

Appendix

Listed below is a selection of theses which have been produced by students jointly supervised by UW Chemistry Department and FRI staff.

- Ede, R M, 1984, The synthesis of two new trimeric lignin model compounds and some aspects of lignin hydrogenolysis, (M Sc).
 Stuthridge, T R, 1984, Some studies of compounds extracted from New Zealand Kraft Pulp bleach plant effluents, (M Sc).
 Robinson, N P, 1985, Synthetic studies of some 1,2-diarylpropane and phenylcoumaran lignin model compounds, (M Sc).
 Williams, R J, 1986, Studies of the treatment of pulp and paper mill effluents by some New Zealand soils, (M Sc).
 Ede, R M, 1987, The synthesis and reactivity of β -aryl lignin model quinone methides, (D Phil).
 Stuthridge, T R, 1990, Characterisation and fate of bleached kraft mill effluents from a New Zealand pulp and paper mill, (D Phil).
 Barrow, K M J, 1991, Alkaline delignification reactions: a study using lignin model compounds, (M Sc (Tech)).
 Cronshaw, D R, 1992, The weathering of chemically-labelled modified wood, (M Sc (Tech)).
 Goodwin, N, 1994, A study of alkaline delignification using lignin model compounds, (MSc(Tech)).
 Torr, K, 1994, The role of acetylation in inhibiting photoyellowing and photodegradation of *Pinus radiata* wood and lignin, (MSc(Tech)).

¹The student takes a mix of undergraduate and graduate courses as appropriate for their background, and carries out a shorter research project (again, collaboratively if appropriate), and produces a dissertation rather than a substantial thesis.

²A graduate degree unique to the University of Waikato. Students take a course entitled "Industrial Technology and Innovation" in addition to their science courses. The thesis research is carried out with either a research institute or private company. The student can either be located on campus, or at the research partner's facilities, and there are research supervisors from both parties involved.

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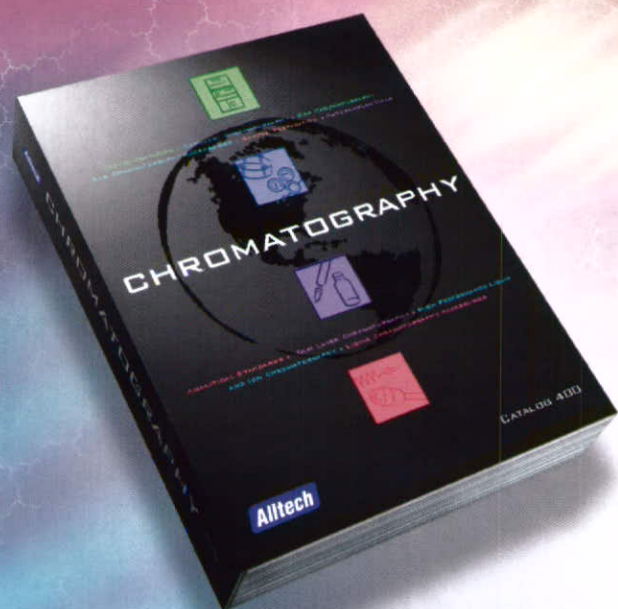


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CONFERENCES & SEMINARS

29 July - 2 August 1996

Recent Advances in Polymer Synthesis

Venue: University of York, England, UK
Contact: Professor P Hodge
Department of Chemistry
University of Manchester
Oxford Rd, Manchester
M13 9PL, England, UK
Fax: (+44-1)-612754598
Email: philip.hodge@man.ac.uk

4-9 August 1996

IUPAC MACRO '96

Venue: Seoul, Korea
Contact: Dr Kwang Ung Kim
Secretariat IUPAC MACRO SEOUL '96
Division of Polymers, KIOST
P O Box 131, Cheongryang
Seoul 130-650, Korea
Fax: (+1582-2)-9576105
Email: iupac@kistmail.kist.re.kr

4-10 August 1996

VI World Conference on Clinical Pharmacology and Therapeutics

Venue: Buenos Aires, Argentina
Contact: CPT96
Marcelo T de Alvear 1980
1122 Buenos Aires, Argentina
Tel: (+54-1)-8116650
Fax: (+54-1)-8142733

11-16 August 1996

3rd International Hydrocolloids Conference

Venue: Sydney, Australia
This conference will focus on the new industrial opportunities for hydrocolloids in important areas including foods, nutritional products, pharmaceuticals, health and personal care products and agricultural and veterinary products. To meet those challenges, the conference will discuss novel production and processing techniques.

Contact: Gail Hawke, Conference Secretariat
P O Box N399, Grosvenor Place
Sydney, NSW 2000, Australia
Tel: (+61-2)-2523388
Fax: (+61-2)-2415282

11-16 August 1996

6th Annual Queenstown Molecular Biology Meeting

Venue: Queenstown, New Zealand
Contact: Dr Martin Kennedy
Cytogenetic and Molecular Oncology Unit
Christchurch School of Medicine
P O Box 151, Christchurch, New Zealand
Fax: (+64-3)-3640750
Tel: (+64-3)-3640880
Email: mkennedy@chmeds.ac.nz

12-16 August 1996

Australasian Association of Clinical Biochemists Annual Scientific Meeting

Venue: Darwin, Australia
Contact: Tel: (+61-9)-3705224

14-17 August 1996

Coatings from Start to Finish (Surface Coatings Association Australia)

Venue: Sydney Convention Centre
Darling Harbour, Sydney, Australia
Contact: SCAA '96 Secretariat
GPO Box 128
Sydney NSW 2001, Australia
Tel: (+61-2)-2622277
Fax: (+61-2)-2623135
Email: TOURHOSTS@TOURHOSTS.com.au

25-30 August 1996

10th International Biotechnology Symposium

Venue: Sydney, Australia
Contact: Symposium Secretariat
G P O Box 128
Sydney, NSW 2001, Australia

1-4 September 1996

Environmental Biotechnology, An International Conference

Venue: Massey University
Palmerston North, New Zealand
Contact: Conference Secretary
Environmental Biotechnology Conference
Process and Environmental Technology Dept.
Massey University
Palmerston North, New Zealand
Tel: (+64-6)-3505351
Fax: (+64-6)-3505654
Email: g.f.withers@massey.ac.nz

10-13 September 1996

NZWWA Annual Conference and Expo

Venue: Quality Hotel Rutherford, Nelson, New Zealand
Contact: NZWWA Annual Conference and Expo
C/- Conferences & Events
P O Box 1254, Nelson, New Zealand
Tel: (+64-3)-5466022
Fax: (+64-3)-5466020

16-18 September 1996

Engineering Crops for Industrial Uses

Venue: Bristol, England, UK
Contact: Professor P R Shewry
IACR-Long Ashton
Department of Agricultural Sciences
University of Bristol, Long Ashton
Bristol BS19 9AF, England, UK
Fax: (+44-1275)-394299

CONFERENCES & SEMINARS

24-26 September 1996

BioInnovations Convention

Venue: Wembley, London, England, UK
Contact: Bob Kyte, Step Exhibitions Ltd
The Studio, Northfields, Speldhurst
Tunbridge Wells, TN3 OPL, England, UK
Tel: (+44-1892)-863986
Fax: (+44-1892)-863464

24-26 September 1996

Science 2000 Conference and Exhibition

Venue: Melbourne, Australia
Contact: Tel: (+61-2)-8716180

29 September - 4 October 1996

The International Meeting and Exhibition of the Australian and New Zealand Societies For Microbiology

Venue: Christchurch, New Zealand
Contact: ASM and NZSM '96 Secretariat
G P O Box 128
Sydney, NSW 2001, Australia
Tel: (+61-2)-2622277
Fax: (+61-2)-2622323
Email: TOURHOSTS@TOURHOSTS.com.au

3-4 October 1996

The Second Australian Molecular Modelling Workshop (ASBMB/ASPP Satellite Meeting)

Venue: John Curtin School of Medical Research
Australian National University
Canberra, Australia

The Workshop has invited overseas and local speakers presenting review/future directions talks, selected oral papers, posters and software demonstrations. The planned program includes sessions on:

Protein Structure Prediction (1-D to 3-D profiling/threading, sequence analysis, secondary structure prediction, derived 3-D databases and folds, homology building)

Drug Design (molecular similarity, docking, *de novo* ligand design)

Computational Chemistry and Simulations (hybrid quantum and molecular mechanics (qm/MM), conformational searching, protein dynamics, free-energy perturbation/molecular dynamics)

Force Fields and Solvation (force field development, electrostatic potentials, solvation).

Contact: Dr Jill Gready
John Curtin School of Medical Research
Australian National University
Canberra, ACT 0200, Australia
Tel: (+61-6)-2798304
Registration: mmworkshop@jcsmr.anu.edu.au
www: <http://biocomp.anu.edu.au/Wkshops/MolMod>

6-11 October 1996

Australian Institute of Medical Scientists, National Scientific Meeting

Venue: Adelaide, South Australia
Contact: Tel: (+61-8)-2391515

8-11 October 1996

Hands-On Computer Workshop on Molecular Modelling and Bioinformatics of Protein Structure and Function (ASBMB/ASPP Satellite Meeting)

Venue: Computational Science and Engineering Laboratory, Australian National University
Canberra, Australia

The Workshop will focus on developing skills in accessing and analysing database information on protein structure (1-D and 3-D) using molecular graphics and other display tools, manipulating protein structure and investigating protein-protein and protein-ligand interactions, undertaking limited computations (molecular mechanics and dynamics), and using protein structure prediction methods (1-D to 2-D and 1-D to 3-D). The format will be mostly structured exercises leading into project work chosen within participants' interests. Exercises will be conducted on SGI workstations using commercial software and with net access to external databases and servers. There will be a minimum of lectures to introduce topics. The main targeted participants are research students and postdoctoral workers in experimental biomolecular science.

Contact: Dr Jill Gready
Computational Molecular Biology and Drug Design Group
Division of Biochemistry and Molecular Biology
John Curtin School of Medical Research
Australian National University
Canberra, ACT 0200, Australia
Tel: (+61-6)-2798304
Fax: (+61-6)-2490415
Email: Jill.Gready@anu.edu.au
Registration: mmworkshop@jcsmr.anu.edu.au
www: <http://biocomp.anu.edu.au/Wkshops/HandsOn>

8-11 October 1996

AUSPLAS '96 (Australian Plastics Conference)

Venue: Melbourne Exhibition Centre
Melbourne, Australia

Contact: John Kelly
Exhibition Management Pty Ltd
Melbourne, Australia
Tel: (+61-3)-96464044
Fax: (+61-3)-96461828

9-11 October 1996

Anti-Cancer Targets and Strategies for the 21st Century

Venue: Castres, France
Contact: Marian Cabailh
Conference Secretariat, CRPF
17 Avenue Jean Moulin
81106 Castres Cedex, France
Tel: (+33-63)-714368
Fax: (+33-63)-714299

14-18 October 1996

6th Post-Doctoral Course on Degradation and Stabilization of Polymeric Materials

Venue: Brighton, UK
Contact: Dr N C Billingham

CONFERENCES & SEMINARS

School of Chemistry & Molecular sciences
University of Sussex, Brighton
BN1 9QJ, England
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Fax: (+44-1273)-677196
Email: N.Billingham@sussex.ac.uk

School of Engineering
University of Auckland
Private Bag 92019
Auckland
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Fax: (+64-9)-3737463

14-18 October 1996

43rd National Symposium: American Vacuum Society

Topics: Thin Films, Microelectronics, Nanostructures,
Processing, Surfaces, and Vacuum
Venue: Philadelphia, Pennsylvania, USA
Contact: AVS
120 Wall Street, 32nd Floor
New York, NY 10005, USA
Tel: (+1-212)-2480200
Fax: (+1-212)-2480245
Email: avsnyc@vacuum.org

10-12 November 1996

Australian Institute of Nuclear Science & Engineering: RADIATION '96

Venue: AINSE Theatre
Lucas Heights, Sydney, Australia
Contact: The Conference Manager, AINSE
PMB 1, Menai
NSW 2234, Australia
Tel: (+61-2)-7173376
Fax: (+61-2)-7179268
Email: ainse@ansto.gov.au

20-23 October 1996

International Symposium on Laboratory Automation and Robotics (ISLAR '96)

Venue: Boston Park Plaza Hotel
64 Arlington Street
Boston, MA 02117, USA
Contact: ISLAR '96
Zymark Center
Hopkinton, MA 01748, USA
Tel: (+1-508)-4359500
Fax: (+1-508)-4353439
Email: islar@zymark.com
www: <http://www.zymark.com>

12-15 November 1996

Pacific Rim Biotechnology Conference

Venue: Seoul, Korea
Contact: Fax: (+82-42)-8604739

19-21 November 1996

Joint ICP and New Zealand Trace Elements Groups Conference

Venue: Le Grand Hotel, Victoria Street, Hamilton
New Zealand
Organisor: Waikato Branch, New Zealand Institute of
Chemistry, New Zealand Trace Element Group

Topics to be included:

Trace elements - analysis, importance in agriculture, horticulture,
health, and the environment.

ICP-MS and ICP-OES - instrumental technique, sample
preparation, applications.

The conference will include Plenary Speakers, invited and
submitted papers, a trades display and a conference dinner.

Contact: Dr Peter Robinson
R J Hill Laboratories Ltd
P O Box 4048
Hamilton, New Zealand
Ph: (+64-7)-8552266
Fax: (+64-7)-8549886
Email: Peter@rjhil.co.nz

22-25 October 1996

19th International Federation of Societies of Cosmetic Chemists Congress

Venue: Darling Harbour, Sydney, Australia
Contact: Secretariat
P O Box 249 Kingsgrove
New South Wales 2208, Australia
Fax: (+61-2)-5543228
or Peter Strasser
Tel: (+61-3)-93875371

23-24 October 1996

Near Infrared Spectroscopy and Imaging of Living Systems - A Royal Society Discussion Meeting

Venue: London, England, UK
Contact: Science Promotion Section
The Royal Society
6 Carlton House Terrace
London SW1Y 5AG, England, UK
Fax: (+44-171)-8392891
Tel: (+44-171)-8395561

23-24 October 1996

Applications of Membrane Technologies - A Short Course

Venue: University of Auckland, Auckland
Contact: Dr Paul Pickering
Natural Products Processing Group

24-27 November 1996

Australian Society for Medical Research, National Scientific Conference

Venue: Gold Coast, Queensland, Australia
Contact: Fax: (+61-7)-38757665

25-29 November 1996

13th International Corrosion Congress

Venue: Carlton Radisson Hotel, Melbourne, Australia
Contact: Conference Secretariat
P O Box 5142, Clayton
Victoria 3168, Australia
Tel: (+61-3)-95440066
Fax: (+61-3)-95435905

CONFERENCES & SEMINARS

2-6 December 1996

NZSBMB/NZIC Joint Conference 1996: "Molecules for the Future"

Venue: University of Otago, Dunedin, New Zealand
Contact: Dr K J F Farnden
Biochemistry Department
University of Otago
P O Box 56
Dunedin, New Zealand
Ph +64-3-4797874
Fax +64-3-4797866
Email: kevinjff@sanger.otago.ac.nz

Confirmed speakers at this time are:

Colloids and Surfaces - Roger Horne, Adelaide
Chemical Education - Professor John Emsley,
Imperial College London
Cell Walls - Professor Nick Carpita,
Purdue University
Pigments - Professor Raymond Brouillard,
Universite Louis Pasteur,
Strasbourg
Analytical Chemistry - Professor Frank Millero,
Rosenstiel School of Marine
and Atmospheric Sciences,
University of Miami

9-11 December 1996

4th Annual RACI Research and Development Topics In Analytical Chemistry Meeting

Venue: RMIT, Melbourne, Australia
Contact: Marie Bou-Raad
Secretary of the Organising Committee
Tel: (+61-3)-96602557
Fax: (+61-3)-96391321
Email: chem_rd96@bunyip.ph.rmit.edu.au

13-15 December 1996

Second Symposium on Oceanian - Japanese Organic Chemistry Synthesis and Natural Products

Venue: Tokushima Bunri University
Faculty of Pharmaceutical Sciences, Japan
Contact: Associate-Professor Rob A J Smith
Chemistry Department
University of Otago
P O Box 56
Dunedin, New Zealand
Tel: (+64-3)-4797924
Fax: (+64-3)-4797906
Email: rajsmith@alkali.otago.ac.nz

10-14 December 1996

Fifth Eurasia Conference on Chemical Sciences

Venue: Zhongshan (Sun Yatsen) University
Guangzhou (Canton), China
Contact: Professor Liang-Nian Ji
General Secretary, EuAsC₂S-1996
Biotechnology Research Centre
Zhongshan (Sun Yatsen) University
Guangzhou (Canton) 510275, China
Tel: (+86-20)-4185461

or Tel: (+86-20)-4186300-7115
Fax: (+86-20)-4189173 or (+86-20)-4185551
Email: leiy@pebc2ihep.ac.cn

or Professor Charmian O'Connor
Chemistry Department, University of Auckland
Private Bag 92019, Auckland, New Zealand
Tel: (+64-9)-3737999

2-6 February 1997

The Australian and New Zealand Society for Mass Spectrometry 16th Conference (ANZSMS 16)

Venue: University of Tasmania, Tasmania, Australia
Contact: Mures Convention Management
Victoria Dock
Hobart, TAS 7000, Australia
Tel: (+61-002)-312121
Fax: (+61-002)-344464
Email: mures@hba.trumpet.com.au
<http://www.csl.utas.edu.au/ANZSMS/anzsms16.html>

3-7 February 1997

22nd Australasian Polymer Symposium

Venue: Auckland, New Zealand
Contact: Mr N R Edmonds
Faculty of Science and Engineering
Auckland Institute of Technology
Private Bag G P O, Auckland, New Zealand
Tel: (+64-9)-3079999 ext: 8181
Fax: (+64-9)-3079973

9-13 February 1997

1997 Lorne Meeting on Protein Structure and Function

Venue: Lorne, Victoria, Australia
Plans for the meeting will be available on the WWW site:
<http://grimwade.biochem.unimelb.edu.au>
Contact: lorne_orgs@unimelb.edu.au

10-14 February 1997

Microscopy 97. Microscopy New Zealand Conference

Venue: Medical School, University of Auckland
Auckland
Contact: Dr Ian Hallett
HortResearch, Private Bag 92169, Auckland
Tel: (+64-9)-8493660
Fax: (+64-9)-8154201
Email: ihallett@hort.cri.nz

16-20 May 1997

Seventh Asian Chemical Congress

Venue: International Conference Center Hiroshima
Hiroshima, Japan
Contact: Mr A Nakanishi
Head, Administration Office of 7ACC'97
Chemical Society of Japan
1-5, Kanda-Surugadai
Chiyoda-ku, Tokyo 101, Japan
Tel: (+81-3)-32926161
Fax: (+81-3)-32926318
Email: 7acc97@chemistry.or.jp
[www: http://www.t.soka.ac.jp/chem/cs/7ACC.html](http://www.t.soka.ac.jp/chem/cs/7ACC.html)

18-22 August 1997

**8th European Congress on Biotechnology,
70th Event of The European Federation of Biotechnology**

Venue: Budapest, Hungary
Contact: Professor Laszlo Nyeste
Department of Agricultural Chemical
Technology
Technical University
Budapest, H-1121 Budapest XI
Hungary
Tel/Fax: (+36-1)-463220

21-26 September 1997

XXX Colloquium Spectroscopicum Internationale

Venue: World Congress Centre
Melbourne, Australia
Contact: The Meeting Planners
108 Church Street
Hawthorn, Victoria 3122
Australia
Tel: (+61-3)-98193700
Fax: (+61-3)-98195978

23-25 November 1997

**6th Conference of the Society for Free Radical Research
(Australasia)**

Venue: Dunedin, New Zealand
Contact: Dr Mike Murphy
Biochemistry Department
University of Otago
P O Box 56, Dunedin, New Zealand
Tel: (+64-3)-4797871
Fax: (+64-3)-4797866
Email: murphy@sanger.otago.ac.nz

13-17 July 1998

**MACRO '98 - 37th IUPAC International Symposium on
Macromolecules**

Venue: Gold Coast, Queensland, Australia
Contact: Department of Chemistry
University of Queensland
Queensland 4072, Australia
Tel: (+61-7)-3653511
Fax: (+61-7)-3653628

6-11 February 2000

RACI 11th National Convention

Venue: Canberra, ACT, Australia
Contact: Dr W D Cook
Dept Materials Engineering, Monash University
Clayton VIC 3168, Australia
Tel: (+61-3)-99054926
Fax: (+61-3)-99054940
Email: WDCOOK@eng2.eng.monash.edu.au

OBITUARY:

Alan Robert Furness, BSc(Hons) PhD (Massey)



Dr Alan Robert Furness, tutor in Chemistry at the Manawatu Polytechnic and a recent Chairman of the Manawatu Branch of the NZIC, died in Wellington Hospital on 15th May 1996 after a lengthy and courageous battle with cancer. He is survived by his wife Lee whom he married in 1987.

Alan was born in 1948. He attended Hokowhitu Primary School, Palmerston North Intermediate Normal and Freyberg High School in Palmerston North, and had decided at age ten that he wanted to be a teacher.

In 1967 Alan enrolled at Massey University and commenced a degree in Chemistry, completing a BSc with First Class Honours. He was awarded a University Grants Council Scholarship and completed a PhD in Chemistry at Massey. He then attended Auckland Teacher's College in 1975 and commenced teaching at Manawatu College in Foxton in 1976. Alan moved to Palmerston North Boys High School in 1978, and stayed until 1984 when his two great mentors Ian Colquhoun and Morrie Ineson retired. He took up a position as a laboratory manager with the Lactose Company in Eltham, but returned to Palmerston North in 1986 when his mother became seriously ill. It was then that he became a tutor in Chemistry at the Manawatu Polytechnic.

Throughout his life Alan was a member of the Boys' Brigade and stayed a serving officer of the Brigade right up to his death. He was the national president for ten years between 1984 and 1994. With Ward Fischer he set up the National Leadership Development Courses for school sixth and seventh formers. These courses have run since 1980 and Alan attended sixteen Courses, ten as Director of Stage 1.

Alan served on the Manawatu Branch Committee of the NZIC for 10 years, twice as Chairman (1988 and 1994). Alan's treasurer-ship of the Branch Committee in 1991-93 has become legendary due to his control of the finances. Alan was an energetic force behind the Manawatu Chemistry Quiz organised by the Branch each year for participating Secondary Schools in the Manawatu region (and latterly in other surrounding regions as well). This quiz started during his first term as Branch Chairman. He was also the instigator of a booklet of model answers to University bursary examination questions that were purchased by schools throughout New Zealand. The funds obtained from this exercise formed the financial basis for the Manawatu Education Trust from which regional schools currently apply for school equipment.

Alan was passionate about a number of things in life. These included cats, chemistry, World War 2, recycling, Boys' Brigade, Clint Eastwood movies, relationships, truth, honesty and integrity. His personal qualities, as well as his energy and enthusiasm for chemistry and its promotion, will be greatly missed in the Manawatu.

Harry Percival

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ENVIRONMENTAL ISSUES

COOLING THE GREENHOUSE DEBATE

Scientist Patrick Michaels, a leading sceptic (or realist, depending on your point of view) on the climate change issue addressed the Royal Society and the Business Roundtable in Wellington recently.

Michaels entertained his audiences with a wide ranging review of climate change science and a (diplomatic) critique of the political elements of the IPCC process. He has long been a critic of an approach to climate change prediction which is based largely on unvalidated models.

The major points of his critique were:

1. The idea that the IPCC should produce a consensus of scientists is fundamentally flawed. He argues that the progress of scientific understanding occurs through the testing of a range of hypotheses and a constructive debate. This is a continually developing process which cannot and should not be forced into a single agreed view.

2. The IPCC has systematically over-estimated some of the key factors affecting climate change and overstated the risks. Since 1990, their estimates of the climate warming and sea level rise have fallen substantially. It now appears that the estimates are moving towards his view of a warming of 1.3°C by 2100, which would not be significantly greater than natural climate variability.

3. It is claimed that the climate models perform well when they are adjusted for the negative forcing effects of sulphate aerosols

and ozone depletion. Michaels' analysis shows that these factors are not a sufficient explanation for the failure of climate models to predict climate change.

The importance of Michaels' argument is the implications these findings have for policy making. He argues that an appropriate response to a global warming of 1.3 °C and a sea level rise of less than 50 cm by 2100 would be to delay costly actions until new low CO₂ technologies become available, and concentrate on adaptation.

COAL CORPORATION COMMITS TO CO₂ REDUCTION

Coal Corporation of New Zealand has signed a voluntary agreement with the Government, pledging to cut carbon dioxide emissions from its mining operations. Chief Executive Ian Collinson said emissions would be nearly 15 percent lower in 2000 than if the company took no action. The Corporation is cutting emissions by doing such things as replacing inefficient plant and using electricity in place of diesel engines to power coal beltways. Mr Collinson said millions of dollars were being spent on the new plant.

A corporation spokesman agreed that emissions from mining operations were rising - simply because New Zealand had doubled coal exports in the past five years to 1.5 million tonnes and exports were growing rapidly. However, New Zealand coal was noted for its low ash and sulphur levels and high energy content. Where it was burnt overseas its use cut environmental impacts.

ORGANOCHLORINES PROGRAMME, BULLETIN NO. 3

Survey of organochlorines in the New Zealand environment

Introduction

The environmental survey of organochlorines in the New Zealand environment is the first stage of the Organochlorines Programme. This article provides a progress report on the survey.

Overview

The organochlorine compounds being studied comprise dioxins¹, PCBs², and a range of persistent organochlorine pesticides including DDT, aldrin, dieldrin, chlordane, and pentachlorophenol (PCP). The objectives of the survey are:

- To assess background organochlorine contamination levels within New Zealand ecosystems;
- To support the development of national environmental standards and guidelines for the substances studied.

The Organochlorines Programme as a whole comprises the study of human and environmental levels of organochlorine substances, the characterisation of risk, and the development of national environmental standards and guidelines.

The progress of the programme is being monitored by the Organochlorine Consultative Group.

Sampling Programme

The survey involves the collection of air, soil, water, sediment and biota samples from around New Zealand³. Assessment of the data collected will enable comparisons to be made with similar overseas studies.

River Water Sampling

River water samples were collected monthly between January and March 1996 (i.e. on three occasions) from 13 rivers at 16 sites (Table 1) representing 12.7 % of the total New Zealand catchment. The rivers were carefully selected as being representative of New Zealand's waterways. They range from pristine to those which receive a variety of domestic, industrial and agricultural wastes.

Table 1. River Water Sampling Sites

Waipa River at Whatawhata	Rangitaiki River at Te Teko
Waingongoro River at SH45	Wanganui River at Te Maire
Manawatu River at Opiki	Mohaka River at Raupunga
Tukituki River at Tamumu Bridge	Ruamahanga River at SH2
Ruamahanga River at Waihenga	Haast River at Roaring Billy
Waimakariri River at old H/W Bridge	Halswell River at McCartneys Bridge
Taieri River at Sutton Stream	Taieri River at Allanton
Mataura River at Parawa	Mataura River at Seaward Downs

Each sample consisted of 10 L of river water. Typically this was collected from four positions across the width of the river. At each position, one Winchester (2.5 L volume) of sample was collected.

The actual sample analysed was a composite sample prepared from the three monthly samples. A comprehensive sample preparation procedure was applied to ensure a representative composite sample was taken for analysis. Sampling was undertaken by the National Institute of Water and Atmospheric Research (NIWA)

River Biota Sampling

The collection of river biota (eel and trout) was also undertaken by NIWA, with the assistance of Fish & Game Council anglers in some areas. Sampling was carried out from the same river and sampling locations indicated in Table 1.

Eel were successfully collected from all sites. In contrast, it proved unexpectedly difficult to catch the required number of trout at some sites. Another attempt will be made when the trout fishing season re-opens in October 1996.

Analysis of river biota is being undertaken on a freeze-dried composite sample prepared from a number of individuals taken from each site.

Soil Sampling

For the soil sampling programme, the country was divided into eight strata on the basis of climate, geology and geographical (regional council) boundaries. Thirty-six soil samples were collected (in most cases by Landcare Research Ltd) from each of these strata based on five identified land types:

- Pristine land (indigenous forest and grassland generally in national parks);
- Pasture on hill country;
- Pasture on flat land;
- Parkland in provincial centres (near urban areas);
- Parkland in metropolitan centres (near to urban and commercial/light industrial areas in Auckland and Christchurch).

Sites for sampling from, and agricultural lands were selected using a random number generator and a grid referenced map. Metropolitan and provincial samples were collected from local

parks and reserves; suitable sites were identified in consultation with city and district council staff.

Soil samples were collected as a series of discrete soil cores. Fifty-four soil cores were taken from flat land and hill country pasture samples were collected from two independent areas ('sampling stations') within each strata. Similarly, samples from pristine lands consisted of 27 cores collected from a single sampling station. For provincial and metropolitan centres, samples were collected as a composite of cores taken from four parks or reserves.

With all soil material collected, a comprehensive sample preparation procedure was followed to ensure a fully representative composite sample was taken for analysis.

Air Sampling

A total of 54 ambient air samples are being collected from 10 sites over a 12-month period. These sites include baseline/pristine environments (Baring Head, Nelson Lakes National Park), agricultural environments (Taranaki hill country and Canterbury farms) as well as provincial towns and cities and major metropolitan centres (Auckland city, South Auckland, Hamilton, Masterton, Greymouth, Christchurch).

Sampling began in March 1996 and is being carried out continuously over a 20-day period for each month resulting in the filtering of approximately 4,000 m³ of air. Any contaminants are adsorbed on to filter material.

Estuarine Sampling

Sampling from estuarine ecosystems involves the collection of a total of 26 sediment and shellfish (cockle) samples from 12 estuaries. The estuaries selected for sampling range from pristine to estuarine catchments of urban, industrial and agricultural areas. The estuaries are: Parengarenga Harbour; Whangarei Harbour; Manukau Harbour; Hellyers Creek, Waitemata Harbour; Kawhia Harbour; Tauranga Harbour; Wairau Estuary; Whanganui Inlet; Moutere Inlet; Avon Heathcote Estuary; Otago Harbour; New River Estuary.

In general the estuarine samples were collected by Regional Council staff.

Quality Assurance Project Plan

The sampling of environmental matrices for chemical contaminants can be a complex task. A quality assurance project

¹ Polychlorinated dibenzo-*p*-dioxins (PCDDs) and polychlorinated dibenzofurans (PCDFs)

² Polychlorinated biphenyls

³ A copy of the 'Study Design for the Assessment of Organochlorine Contaminant Levels in the New Zealand Environment' is available on request to Organochlorines Programme, Ministry for the Environment, P O Box 10362, Wellington.

plan (QAPP) was prepared in consultation with the respective sampling agencies. The purpose of the QAPP was to provide all sampling teams involved in the study with detailed information for each phase of the sampling programme which ensured that standardized procedures were applied throughout.

Information was provided on the sampling sites, sample size and identification, the collection procedure, measures to prevent field contamination, sample packaging and shipping, and quality

assurance and quality control requirements including requirements for detailed field documentation.

Analytical Programme

The Institute of Environmental Science & Research (ESR) provided all sampling teams with pre-cleaned sample collection jars, solvents and related items necessary for the collection of samples. Analytical work for the environmental survey has been contracted as set out in Table 2.

Table 2. Laboratory Arrangements for Contaminant Analysis

Contaminant	Principal Laboratory	Quality Control Laboratory
Dioxins, PCBs	ESR	Ministry of Environment & Energy, Ontario
OC Pesticides	ESR	Food & Horticultural Research
Chlorophenols	Food & Horticultural Research	ESR
Total Organic Carbon	Landcare Research	

ORGANOCHLORINES CONSULTATIVE GROUP

Howard Ellis, Ministry for the Environment (Chair)
 Dr Simon Buckland, Ministry for the Environment
 Jim Waters, Ministry of Health
 Dr Bill Jolly, MAF Regulatory Authority
 Paul Dell, Local Authorities
 Mark de Bazin, Timber Industry
 Peter Sligh, Pulp and Paper Industry
 Dr Jim Barnett, Agricultural Sector
 Tony Petley, AGCARM, NZCIC, Waste Disposal Industry
 Norm Thom, CAE, IPENZ, NZIC, WMINZ

John Hohapata, Adviser on Iwi
 Jocelyn Keith, National Council of Women
 Michael Szabo, ECO
 Simon Towle, ECO
 (Incineration industry to be appointed)

TECHNICAL SPECIALISTS

Dr Michael Bates, ESR Communicable Disease Centre
 Dr Don Hannah, ESR Wellington Science Centre

Treatability studies on pcp and dioxin contaminated soils

Overview

This article reports on the results of treatability trials on pentachlorophenol (PCP) and dioxin⁴ contaminated soils. Two treatment technologies were applied in sequence, namely, thermal desorption followed by chemical decomposition (see later explanation on technologies).

The work comprised the first phase of a two phase evaluation of the potential of these technologies to remediate soil contaminated with PCP and dioxins from New Zealand sawmills. The second phase, which involves a pilot scale plant, is scheduled to run between June and September 1996.

The treatability trials were undertaken by the owners of the technologies, ADI Services Ltd. (ADI) at their Melbourne laboratory, with specialised dioxin analyses by ESR Ltd., Wellington. The trials were commissioned by the Ministry for the Environment in conjunction with three New Zealand timber companies: Carter Holt Harvey Ltd, Fletcher Challenge Forests, and the Forestry Corporation of New Zealand.

Laboratory Treatability Trial

PCP and dioxin⁵ were thermally desorbed (heated to remove the contaminants) from the sample of soil and then chemically decomposed. This was carried out in a small scale version of the thermal desorption and chemical decomposition technologies.

Soil Sample

A 16 kg sample of PCP/dioxin contaminated soil from a New Zealand sawmill was forwarded to the Melbourne laboratories of ADI.

Homogeneous material of up to 1 mm suitable for the laboratory trials was prepared by sieving, to remove rock fragments, and air dried to around 10% moisture content.

Equipment

The majority of trials were conducted in a 450 mL stainless steel reactor modified to allow for:

- Operation at atmospheric pressure under inert nitrogen gas;
- Rapid heating to a maximum of 350 °C;
- Distillation into an ice/salt cooled (-20 °C) trap (followed by a further condensate trap at ambient temperature and two activated carbon traps ensuring total containment of distilled contaminants);
- Slow anchor paddle stirring of the soil.

Two other trials were conducted in a custom-built glass barrel thermal desorber. Continuous processing conditions were simulated by slow rotation and the rapid heating of soil to varying temperatures of up to at least 450 °C in the presence of air or an inert gas.

Experimental design

A total of 44 thermal desorption trials were completed using a variety of physical conditions and chemical additives. The laboratory work was directed towards the development of process conditions and recipes suitable for pilot plant application.

The experiments consisted of placing 100 g of soil and additives into the thermal desorber equipment, displacing air with nitrogen, rapidly heating to the required temperature, maintaining that temperature for a set period and then rapidly cooling.

The equipment was dismantled and the soil sample and liquid condensate removed from the cold trap for analysis. The reactor, connecting tubing and condensate traps were rinsed thoroughly with solvents to recover all traces of condensed organics for analysis.

The following thermal desorption variables were examined: temperature; time; water content; alkali additive; catalyst additive; accelerant additive.

Analysis

PCP and OCDD determinations were carried out routinely at the ADI laboratory. Detection limits were in the range of 1-10 ng/g and 10-50 ng/g respectively. Specialised high resolution GCMS analysis of samples selected for the measurement of individual dioxin congeners was carried out at the ESR laboratory.

Results

The thermal desorption of PCP and dioxin contaminated soil were optimised:

- At temperatures of 400 - 450 °C for 30 minutes;
- By the addition of 5 - 10% alkali earth.

The best alkali earth additive to use (a range of 3 alkali earths were trialled in addition to NaOH, NaHCO₃, and Na₂CO₃) was determined from the following criteria:

- Ability to adsorb water from soil (energy costs decrease with less water in the distillate);
- The elimination of chlorophenols from the distillate;
- Soil handling properties;
- Cost and availability.

The thermal desorption process, using the most appropriate recipe, produced a residual sterile soil, suitable for backfill on site, containing less than 10 ng/g of chlorophenols and less than 5 ng/g of dioxins. The toxic equivalents (I-TEQ) for the soil was reduced to 0.08 ng/g.

In a second stage ADOX reaction, the destruction of dioxins present in the thermally desorbed condensate was demonstrated to a level in excess of 99.999%.

About the technologies

Thermal desorption

Thermal desorption at temperatures ranging from around 300 °C to 600 °C (depending on both the soil matrix and

contaminants) is a widely accepted and practised first stage remediation technology for the removal of organic contaminants from soils and other materials. ADI are currently developing the means to treat soils contaminated with chlorinated substances. The approach being taken involves thermal desorption followed by chemical decomposition processes.

First, the soil is heated under controlled conditions so that the organochlorine contaminants are volatilised from the soil matrix, then condensed and stored. (At elevated temperatures, dioxins can be produced from PCP. However research by ADI has shown that addition of sodium bicarbonate to the soil seems to enhance both desorption and suppress the formation of dioxins).

In a second stage, the concentrated organochlorine condensate is decomposed in a chemical reactor. The US EPA has approved such combined treatment technologies for use on the remediation of several PCP contaminated sites in the USA.

Various technologies can be applied to destroy the organochlorines in a second stage reactor such as Base Catalysed Dechlorination (BCD) or Accelerated Decomposition of Organic Halides (ADOX).

Base Catalysed Dechlorination

The BCD process was developed and patented by researchers working for the US EPA. Its principal application to date has been the treatment of polychlorinated biphenyls (PCBs) in transformer oils. The BCD technology offers a viable alternative to the high temperature incineration (HTI) of contaminated oils. ADI is one of several companies to acquire rights to the BCD process.

Essentially the BCD process uses a common alkali such as sodium hydroxide and a special hydrocarbon oil to act as a hydrogen donor. In conjunction with a proprietary carbon-based catalyst, decomposition and dehalogenation of the organochlorines occurs at temperatures around 350 °C.

The ADOX reaction

The ADOX reaction was discovered by ADI during extensive research and development to support the commercialisation of the BCD process. It differs from the BCD process in that ADOX uses a proprietary organic accelerant, any hydrocarbon oil, and no carbon catalyst is added. In the presence of sodium hydroxide, ADOX causes simultaneous carbon-chlorine/carbon-carbon bond rupture of aromatic organochlorine molecules at temperatures ranging from 250 to 350 °C.

The comparative decomposition rates for the ADOX process are at least 10 to 50 times faster than for the BCD process and this in itself represents a commercially significant advantage. Also, unlike the BCD process, the ADOX process does not involve sequential dehalogenation where more volatile (and potentially more toxic) organohalides are produced as intermediates. The ADOX process converts organohalides directly into carbon and inorganic chloride ions, typically as sodium chloride. ADI has patents pending on ADOX.

⁴ For the sake of brevity the use of the general term dioxin in this report should be taken as implying an unspecified range of chlorodibenzo-*p*-dioxins and the related chlorodibenzofurans.

⁵ predominantly octa chlorodibenzo-*p*-dioxin (OCDD)

Keeping an eye on POPs

Introduction

Persistent organic pollutants (POPs) is a term applied to a group of organic chemicals⁶. POPs is an issue that is rising rapidly on the global environmental agenda. Their unique chemical characteristics, the significance of which are only now being more fully appreciated, has led to POPs being distributed around the globe as ubiquitous environmental contaminants.

What are POPs ?

POPs share four essential characteristics:

- Environmentally persistent - resist physical, biological and chemical degradation;
- Toxic - toxicity and ecotoxicity assessments have indicated concerns about their risks to human health or the environment;
- Bioaccumulative - characterised by low water solubility and high lipid solubility, leading to their bioaccumulation and biomagnification;
- Semi-volatile - enabling them to move long distances through the atmosphere before deposition occurs.

It is this last characteristic which has caused particular international concern. The semi-volatile nature of POPs means that their toxic impact can occur thousands of miles away from the original site of use or emission.

POPs used in the countries of the tropics, for example, eventually volatilise and are transported by atmospheric circulation to the higher and colder latitudes of the hemisphere where condensation occurs. POPs appear to impact most in the regions of Scandinavia, northern Europe, Canada and the Arctic circle.

The push to control further emissions of POPs, and in the long term to limit their accumulation in northern latitude ecosystems, is coming from countries (such as Canada, Denmark, Sweden, Norway, and Germany) that have studied the impacts these chemicals are having on their environments.

Background

An international meeting of experts was held in Vancouver, June 1994, in order to develop a broad-based and global perspective on POPs. The meeting examined human health and environmental concerns, as well as the technical, institutional, social and economic issues relevant to effective global management of the pollutants. A number of issues were noted by the conference, including:

- Once released into the environment, POPs cannot be retrieved;
- POPs can build to high concentrations in biota and recycle within the ecosystems;
- POPs have been detected throughout the world, even in remote areas such as Antarctica and the Arctic, where relatively high levels have been found in fish, marine mammals and humans - this is attributed to long-range atmospheric transportation;
- Stockpiles of unwanted POPs exist in the world;
- In recent decades, many wildlife populations have begun to show reproductive abnormalities, immune dysfunction, neurobehavioural impairment, and elevated incidences of cancers and tumours. These are all consistent with the effects predicted from controlled laboratory animal exposures to POPs;
- The developing mammalian foetus and neonate may be particularly vulnerable to POPs exposure. This arises from transplacental and lactational transfer of maternal burdens at critical periods of development, eliciting effects on offspring at levels which have no effect on the adult⁷.

The Vancouver meeting agreed that "there is enough scientific information on the adverse health and environmental impacts of POPs to warrant coherent action at the national, regional and international level. This will include bans, phase-outs and provisional severe restrictions for certain POPs".

International Action

The United Nations Environment Programme (UNEP) is currently studying ways by which the manufacture, use and emissions of POP chemicals can be minimised.

The Intergovernmental Forum of Chemical Safety (IFCS) is coordinating the preparatory documentation of POPs chemistry, toxicity, transport, and working up possible global, regional and national control mechanisms.

The UNEP Governing Council will consider IFCS recommendations in January 1997. A New Zealand delegation comprising officials from the Ministry of Foreign Affairs and Trade, and the Ministry for the Environment, are participating in IFCS meetings.

⁶ The chemicals topping the list of POPs - nicknamed the "dirty dozen" - comprise the following organochlorine substances: PCBs; dioxins and furans; aldrin, dieldrin, DDT, endrin, chlordane, hexachlorobenzene, mirex, toxaphene, and heptachlor.

⁷ This last point is qualified by the difficulty in distinguishing environmental effects attributable to POPs (low dose chronic exposure) from effects attributable to other environmental stresses. There is also limited information on the effects of low doses and mixtures of POPs on humans, as well as the difficulty of ascribing effects to humans based on animal data.

New Zealand's Contribution

The Ministry for the Environment's Organochlorines Programme is studying nine of the twelve POPs most relevant to New Zealand, and also includes PCP.

Although not designed with international POPs in mind, the Organochlorines Programme may in due course be of interest to other countries in the development of strategies to control POP residues and emissions.

The New Zealand approach is to:

- Collect countrywide background data on levels of POPs in the environment, to estimate human dietary exposure and body burdens, and from this information estimate the likely significance of the levels found;
- Take stock of chemical holdings, continuing emissions, hot spots, sinks and potential sources of POPs;
- Develop national environmental standards and guidelines to regulate emissions and clean up criteria;
- Keep people informed and interested parties involved in decision making;
- Identify relevant technologies to achieve clean-ups;
- Develop as far as practicable a management strategy for organochlorine wastes.

Key achievements in the first year of the Organochlorines Programme:

- Objectives of the Organochlorines Programme defined;
- Consultative Group established; three meetings held;
- Environmental survey designed and peer reviewed by New Zealand and international experts; implemented with 80% of samples collected and analysed; participation of a Canadian Government analytical laboratory;
- A bibliography compiled of publications on organochlorines in the New Zealand environment;
- Three information bulletins prepared and distributed;
- Organochlorine destruction technology trials proceeding; public seminars held in four centres;
- Contacts established with other country initiatives on POPs.
- Proposal developed for the assessment of human body burdens; involvement of USA Government laboratory obtained.

For further information on any aspect of the Organochlorines Programme contact:

Organochlorines Programme
Ministry for the Environment
P O Box 10-362, Wellington
Phone: (04) 4734090
Fax: (04) 4710195

THE OBJECTIVES OF THE ORGANOCHLORINES PROGRAMME

1. *To develop Resource Management (RM) Act national environmental standards for dioxins in the media of air, soil and water; and where necessary, environmental guidelines or standards for selected organochlorine contaminants (e.g. PCP, chlordane, PCBs, dieldrin and DDT).*

To help achieve this objective:

(a) Information will be obtained on ambient levels of dioxins and other key organochlorine contaminants in New Zealand ecosystems and an assessment made of their likely significance in terms of environmental impacts; and,

(b) Information will be obtained, where practicable, on the level of dioxins and other key organochlorine contaminants in the New Zealand human population and in food products, and an assessment made of their likely significance in terms of human health.

2. *To facilitate the commercial application in New Zealand of technologies that safely and effectively destroy organochlorine wastes.*

To help achieve this objective:

(a) Selected technologies will, if required, be trialed and evaluated in conjunction with interested parties;

(b) RM Act consent requirements will be identified.

3. *To identify and develop as far as practicable, the elements of an integrated management strategy for dioxins and organochlorine wastes in New Zealand*

To help achieve this objective:

(a) Potential sources and continuing emissions of dioxins and other key organochlorines will be identified and prioritised;

(b) The extent of chemical holdings of organochlorines will be estimated.

4. *To facilitate informed public input to Government decisions on the management of organochlorines in the New Zealand environment.*

To help achieve this objective the Ministry for the Environment will:

(a) be guided by the Organochlorines Consultative Group;

(b) disseminate key information, facilitate an understanding of the issues among interested parties, and consult effectively during the process of policy development.

NZIC NEWS



policy advice, the co-ordination of scientific research in key areas and through the fostering of international science and technology interactions of high scientific quality and relevance to New Zealand's needs". Somewhere amongst all the fine words there is a niche for the NZIC.

The Office serves the nation's needs by organizing committees to deal with current matters of import. A list of NZIC members' expertise and specialities would be of assistance to the Office.

The Office already 'uses' our members. For a number of weeks, whilst Don McGregor was overseas, Past President of the NZIC, Doug Wright - ex Director of MIRENZ - occupied the chair. There was a rumour that he had retired! I seem to see him regularly in Koru Clubs on his travels with his Possum Control project, and other issues.



Nath Pritchard

From the President ...

Congratulations...For what? I hear you ask. For helping to make the last issue of *Chemistry in New Zealand* a top class journal. I thought it looked excellent and read well. Eleven pages of NZIC news from you. It must be a record.

Two months have gone by since I last sat down to write up my Institute activities. Where do I begin? With a little bit of history. On the 23rd. of May..."a small step for mankind,

and a huge stride for the NZIC"... the Executive and Council were brought together through an E-mail transmission link-up for the first time. All that remains is for the Executive Officer to be brought into the network. The replies that I have received from Jim McQuillan, Peter Robinson and James Wright have all iterated the need for change. They have been passed on to the Executive Officer. E-mail will bring the Institute closer together and hopefully more responsive to its members' needs..

THE ROYAL SOCIETY

Alan Turner and I have sat down with Ross Moore, CEO of the Royal Society, to discuss future options for the Institute. One of the options being housing the Secretariat within the RSNZ building as distinct from the RSNZ being a 'service provider'. A formal letter has been sent from the NZIC and a formal proposal is awaited.

CHIEF SCIENTIST

I visited the Office of the Chief Scientist and discussed opportunities for the Institute with Don McGregor. I learnt that the Office of the Chief Scientist is a division of the Ministry of Research, Science and Technology. "Its role is to maximize the contribution of research, science and technology to wider social, economic and environmental goals through the provision of high quality scientific and technical input to



Don McGregor

PACIFICHEM

We have recently investigated the possibility of hosting Pacifichem, in New Zealand, in the year 2000. The thought of 6000 plus chemists lose in Auckland! It does not bear thinking of. An organising group in Auckland assure us it could be done.

TOUR

I have now been to the Canterbury and Waikato Branches, completing my tour of the major centres. I now have to contemplate the Rotorua Sub-Branch and other parts of the country.

OILS & FATS GROUP

I attended the Oils & Fats Specialist Group AGM in Auckland. With a good deal of trepidation I might add. After years on Council, hearing the words 'specialist groups' uttered in awe and with some terror, I expected hydra at the very minimum! It turned out to be a splendid affair. At the 'Strand on the Strand'. Chairman Laurence Ayres ran a tight AGM. His report is elsewhere in the journal. Not much democracy! But a good meal shared by some thirty people. It was good to catch up finally with Charmian O'Connor. The NZIC Executive was well represented. In addition to myself, Messers Turner, Karl and MacGibbon were present. The latter pair being members of the Specialist Group.

BILL DENNY

I was proud to attend and to share with Bill Denny his receipt of the New Zealand Science and Technology Gold Medal, at Old Government House in Auckland, at the hands of His Excellency Sir Michael Hardie Boys, Governor General of New Zealand and Patron of the Royal Society, and in the presence of Professor Neil Curtis, Professor Sir John Scott, family, friends and colleagues. My sincerest good wishes. A richly deserved honour and a very worthy recipient.

Nath Pritchard
President, NZIC

NZIC BRANCH NEWS

WELLINGTON

A nasty southerly with cold and heavy rain did not stop approximately 50-60 people attending the May monthly meeting. This sizable turnout shows that the Wellington Branch is alive and well. Max Kennedy (from Industrial Research Limited) gave the 1996 "Hudson Lecture" on Wednesday 22 May at a joint meeting between the Wellington branch and "Science Wellington". The title of the lecture was "Bringing the past to life: reviving microorganisms from ancient materials". Max gave an overview, stretching back over the ages, to explore the hypothesis that ancient living material can be revived after years or millenia in ice or in "stasis". Max discussed the arguments for and against believing that the material is truly ancient and the potential for obtaining useful products from it.

Bob Franich (NZ Forest Research Institute) was the June guest speaker. His seminar "The Pox, The Bat and the Dance Floor" was very well received. Bob managed to convince the audience that 'wood-research' has many fascinating aspects to it.

The programme for the next few months looks to be a good one. In July, Stuart Mc Diarmid (Ministry of Agriculture) will discuss BSE — Bovine Spongiform Encephalopathy. In popular speak this is called mad cow disease. A timely topic and likely to be another good branch meeting

In August the chemistry graduate students will do battle for a chance to present their research at the national meeting in Dunedin.

In October we plan to combine the AGM with a taste of Kapiti cheese. Definitely not a meeting to miss!

Professor Leon Phillips (University of Canterbury) has agreed to present this years Mellor Lecture. Details of this will be distributed at a later date but make sure to mark 20 November on your calendar.

Cees Lensink (nzic.wgtn@irl.cri.nz)

MANAWATU

On 13 June Leslie Norris, Research Flavourist, McCormick & Co., Maryland, USA spoke in the HortResearch seminar room on "New Advances in Food Flavour Chemistry". Leslie has a BA in Chemistry and MS in Food Science and has worked with McCormick & Co. since 1986 on basic and applied flavour research. Flavour compounding is the key activity and to help with this there are 2000 bottles of flavour chemicals in the laboratory where Leslie works. The shelf life of compounded flavours is usually 6-12 months. Leslie described research done on fresh herb and vegetable flavours, particularly onion flavours for which a five year project is being carried out, so as to understand flavour chemistry and to predict and control aroma and flavour attributes. Sensory panels are used for this purpose, e.g. to produce "aromagrams", linked with analytical measurements on vacuum distillates of onions useful in predicting sensory attributes, e.g. advanced gas chromatography techniques. It perhaps will come as no surprise to discover that onion flavour and aroma involves complex sulphur chemistry! Some of the sulphur chemicals have to be stabilised to produce a consistent flavour product. Leslie went on to discuss the different sources of the spice, cinnamon, from around the world

and how chemical differences could show up in sensory attributes. The origin of the cinnamon could now be predicted using discriminant plots based on chemical components determined by gas chromatography. She concluded her talk with reference to flavour "encapsulation" techniques being developed.

At the end of June, lecturer Dr Peter Gill in the Department of Chemistry at Massey University, Palmerston North campus, left for the University of Cambridge in England to take up a lectureship in the Department of Chemistry there. In his three and a half years at Massey Peter made a considerable impact and quickly established himself as an extremely capable researcher and lecturer. He was regarded as one of those rare theoretical chemists who could take a complex idea and explain it in a manner understandable to others. Peter's connection with the USA-based theoretical chemistry software company Q-CHEM helped him attract funding for his research which soon started to gain international attention. It was an invitation to speak at the Molecular Mechanics Conference at Cambridge in 1995 that eventually led to his Cambridge appointment.

The research team of Tony Burrell and David Officer in the Department of Chemistry at Massey have been granted \$444,000 from the Foundation for Research, Science, and Technology, to assess the potential for developing a dye for commercial use in producing a cheap electricity source. As reported in the *Dominion* newspaper, the money will help keep them ahead in an international race by producing an array of dyes from porphyrin faster than anywhere else. The dye is capable of imitating photosynthesis, the process by which plants convert light to energy. The ultimate aim is to produce solar-powered cells harnessing electricity created by the dye's photosynthesis at cheaper rates than current energy sources.

At the end of April, Cecil Johnson took early retirement from The Horticulture and Food Research Institute of New Zealand Ltd (HortResearch). In the mid 1960s Cecil joined DSIR's Fats Research Laboratory in Wellington. When the laboratory closed in 1970 (it was then known as the Food Chemistry Division) Cecil moved to Palmerston North to join the Applied Chemistry Division. He has seen name changes and merging of the DSIR's Divisions till finally the formation of the Crown Research Institutes. Cecil was away from HortResearch for only one month before "recycling" himself back to his bench, setting up business as Johnson Analyticals. He is now actively looking for clients who require analyses of lipids (fatty acids etc.), sterols, and related compounds.

There have been several comings and goings at the New Zealand Dairy Research Institute in Palmerston North. Geoff Paterson has left to tour the world. Owen Mills, Sensory Science Section, has been promoted to Principal Scientist, and Russell Wilson has returned to NZDRI after two and half years working for Anchor products in the UK. In that time Russell's family has grown from two to four.

We sadly have to report the deaths of two of our Branch members -Stan White in February, and Alan Furness in May. Both were very enthusiastic supporters of the Branch and our condolences go to their respective families. Alan was a former Chairman of the Branch Committee and an obituary is given elsewhere in this issue.

Harry Percival

OILS AND FATS SPECIALIST GROUP NEWS

CHAIRMAN'S REPORT Annual General Meeting, May 1996

1995 started with a most enjoyable AGM and dinner at an Indian restaurant in Mission Bay. At the core of our small group has always been a philosophy of informality and friendliness. We belong to this group because we enjoy the scientific and commercial world of oils and fats, strange though it sometimes seems to outsiders.

This last year we have had visitors from the UK, Dr Ralph Timms and from Australia, Mr Bryce Bell of the AOF. Both gentlemen are good contacts for us particularly in view of the 1997 conference which is getting underway under the chairmanship of Professor Cambie.

Our Teach-In went well at AIT. It was a good exercise in cooperation with the teaching staff there and the 80 attendees enjoyed the event.

We have published two newsletters with a third imminent. We always need contributions for these information vehicles and we find Lipid Technology invaluable for keeping us up to date with the issues current in the much larger market of the UK.

We have an objective this year to be much more supportive of our parent body the NZIC and to make use of the journal "Chemistry in New Zealand".

Between now and the conference we will have a fairly low-key programme but we intend to be opportunistic, making full use of any interesting visitors to New Zealand.

Finally I would like to thank all the members of the committee for cheerful, efficient and industrious contributions to the running of the group.

Laurence Ayers

The NZIC *In Action*

GUIDELINES - OVERSEAS VISITORS FUND

Council maintains an overseas visitor's fund to support visits to Branches by distinguished chemists from overseas. Those who work in industry, Government or as consultants qualify as distinguished visitors as well as those in teaching institutions. The following outlines procedures to be followed by Branches, members or specialist groups seeking support for a proposed visit from this fund.

1. Council requires that visitors speak at more than one Branch, and preferably to at least three, before a grant will be made.

2. It is essential that a specific member of a Branch or specialist group accept responsibility as tour organiser.
3. The organiser should arrange with the proposed visitor details of time and itinerary of visit and obtain titles of lectures that could be given, and a synopsis of those to be presented to Branch meetings which should be of general interest. The amount of support required by the visitor should be ascertained.
4. Approaches should then be made to the appropriate source, or sources, of support listed below to determine interest and level of financial support.
 - a. NZIC Council
 - b. NZIC Branches and/or specialist groups
 - c. University Chemistry Departments
 - d. Government organisations/ministries, e.g. CRIs, Health, Environment, Research Science & Technology.
 - e. Other, e.g. RSNZ, Industry, Research Associations.
 - f. Community Groups e.g. Rotary, Lions.

The importance is stressed of obtaining support from one or more of the above sources other than the NZIC Council.

5. Council and Branches appreciate and require early specific information about proposed visitors for budgeting and programming.
6. Currently Council grants approx \$500 to support overseas visitors who are sponsored as above for trans-Tasman and internal travel.
7. Council requires that a report and financial statement on the visit be provided by the organiser to either the Executive Officer or the General Secretary.
8. It is Council policy not to pay the expenses of spouses accompanying distinguished visitors.

GUIDE TO NOMINATIONS FOR NEW ZEALAND ROYAL HONOURS

Branches are requested to review their Branch Membership and consider nominating a Member (or Members) for a New Zealand Honour. Nomination forms are available from the NZIC Secretariat in Wellington.

1. WHO MAY MAKE A NOMINATION?

Nominations may be made by any person or persons, by completing a nomination form and forwarding it to the Prime Minister.

2. DEADLINES FOR NOMINATIONS

Nominations for consideration in the context of a Queen's Birthday List should reach the Honours Secretariat no later than 1 February and, for a New Year List, 1 August.

Honours lists are issued on the occasion of the New Year (30 or 31 December) and the New Zealand observance of the Sovereign's Birthday (first Monday in June). Special lists are published periodically (e.g. for bravery awards).

3. CHANGES TO INFORMATION SUBMITTED

Wherever possible the Honours Secretariat should be advised if there has been any important change in the information supplied in the nomination for Royal Honours. (i.e., change of nominee's address, or death of the nominee).

4. EMPLOYMENT RELATED SERVICES

Nominations of persons whose services are related to their employment (e.g. members of the Public Service, New Zealand Police, New Zealand Fire Service, educational, medical and health organisations) should in the first instance be directed to the Chief Executive or Chairperson of the employing organisation for consideration and forwarding to the Prime Minister.

5. CONSENT OF NOMINEE

It is not necessary to have the consent of the person being nominated. If the nomination is successful the nominee will be formally asked by the Governor-General whether the proposed honour is acceptable or not.

6. ALLOCATION AND TYPE OF HONOUR

The number of honours available for award is strictly limited and therefore not all the people nominated can be given recognition. It is important for interested parties to realise that an honour will not automatically follow the submission of a name for consideration.

The type or level of honour should not be stated.

7. ROYAL HONOURS AND CRITERIA FOR RECOGNITION

The main New Zealand Royal Honours are:

(i) **The Order of New Zealand (ONZ). Instituted 1987.**

For outstanding service to the Crown and people of New Zealand in a civil or military capacity.

A single first level, non-titular, Order. Limited to twenty persons living at any one time.

(ii) **The Queen's Service Order (QSO), and associated Queen's Service Medal (QSM). Instituted 1975.**

For valuable voluntary service to the community or meritorious and faithful services to the Crown or similar services within the public sector whether in elected or appointed office.

A single non-titular Order, subdivided 'For Community Service' and 'For Public Services', which ranks as a fourth level Order. The QSM ranks as a sixth level award.

(iii) **The New Zealand Order of Merit. Instituted 1996.**

For those persons who, in any field of endeavour have rendered meritorious service to the Crown and the nation or who have become distinguished by their eminence, talents, contributions, or other merits.

An Order of Chivalry with five levels: 1: Knights and Dames Grand Companions (GNZM), 2: Knights and Dames Companions (KNZM/DNZM), 3: Companions (CNZM), 4: Officers (ONZM), and 5: Members (MNZM).

8. HONORARY AWARDS

People who are not New Zealand citizens or citizens of Commonwealth countries of which the Queen is Head of State, are eligible to be considered for honorary awards.

9. UNSUCCESSFUL NOMINATIONS AND RENOMINATIONS

Once a nomination has been considered but not included in a list, it does not automatically go forward for consideration in a subsequent list unless a renomination or a new nomination from another source is received. It can be assumed therefore that a nomination has lapsed if recognition is not given in an Honours List within 12 months.

Renominations should be in the form of a short letter asking that a particular person be reconsidered. It is not necessary to complete a new nomination form. Any change to the original information and new information should be included in the renomination letter.

10. DEATH OF A NOMINEE

Consideration cannot be given to persons now deceased except in cases involving specific acts of gallantry and bravery.

11. GALLANTRY AND BRAVERY AWARDS

Nominations for gallantry and bravery awards should be submitted on the nomination form and, where possible, accompanied by statements from witnesses of the incident for which recognition is sought. Gallantry and bravery awards may be given posthumously. A separate Guide for Gallantry and Bravery Awards is available on request.

12. CONFIDENTIALITY OF NOMINATIONS

All nominations for honours and awards are treated in the strictest of confidence. Details of the person making the nomination are not disclosed.

13. ACKNOWLEDGEMENT OF NOMINATIONS

All nominations will be acknowledged. It is not possible to enter into correspondence on the merits of any particular nomination.

14. ENQUIRIES

Enquiries relating to the New Zealand Royal Honours System and nominations should be directed to the Honours Secretariat, Cabinet Office, Parliament Buildings, Wellington.
Telephone: (04) 471-9840

NEW PRODUCTS

THE ALL NEW IEC MICROMAX

Designed by a CAD, to work best in your laboratory. Stock is arriving in August, and you can now choose from an ambient or refrigerated model. The NEW MicroMax is faster - 21,000xG, quieter (55 dBA), and retains the exclusive user-friendly control panel and IEC's unbeatable safety design. Ask for a demo today while stocks last.

Contact: Sci Tech
P O Box 663, Dunedin
Ph: (03) 4777860, Fax: (03) 4777870, Email: scitech@dunedin.es.co.nz
circle number 21 on the reader reply card

NEW AUTOMATED FLASH CHROMATOGRAPHY SYSTEM

Isco Inc., introduces new flash chromatography systems that provide fast automated separation of organic compounds for medicinal chemistry, agrichemicals and other applications requiring milligram- to gram-scale purification of organic synthesis products. The unique UV-visible detector features a built-in chart recorder and dynamic range up to 200 AU - ideal for keeping peaks on scale at high solute concentrations. An inert valveless metering pump is compatible with all common solvents used in silica-based liquid chromatography.

The high-capacity programmable fraction collector handles practically any containers from test tubes to 400 mL bottles, and also serves as system controller, shutting the system off at the end of the run to allow unattended operation.

Contact: Clare Hodgson, Shimadzu New Zealand
P O Box 45077, Auckland 1230
Freephone: 0800 735725, Fax: (09) 8360668
circle number 22 on the reader reply card

HP APPLICATION NOTE DESCRIBES AUTOMATED ESTERIFICATION AND ANALYSIS OF FATTY ACID METHYL ESTERS USING THE HP PREPSTATION

Medtec Products Limited announces that Hewlett Packard Company has published an application note (Literature 5965-1110E) titled, "Preparation and Analysis of FAMES by Automated Esterification/Capillary GC."

The publication describes how an integrated HP PrepStation/gas chromatograph can be used to automate the esterification and analysis of fatty acids from a food oil. The fatty acids were extracted from the oil then esterified to fatty acid methyl esters using the HP PrepStation. Subsequent analysis was performed using an HP 5890 Series II GC.

The application note reports that recovery of fatty acid standards was excellent for the automated system, ranging from 87 percent for lauric acid to 107 percent for stearic acid. An actual canola

oil sample was then prepared and quantitated using an internal standard. Recovery and reproducibility were found to be 98 percent and 1.4 percent relative standard deviation, respectively.

The authors also conducted a return-on-investment (ROI) analysis for the HP PrepStation/GC system. They reported that sample-preparation costs dropped by a factor of three, resulting in a six month ROI for their 40-samples-per-month analysis. If batches of 20 samples per day were run, the authors believe that the ROI would have dropped to less than one month.

The 12 page application note is available without charge.

Contact: Medtec Products Limited
P O Box 34-241, Birkenhead, Auckland
Ph: (09) 4806763, Fax: (09) 4806386
circle number 23 on the reader reply card

Information about HP analytical products and services can be found on the World Wide Web at: <http://www.hp.com/go/chem>

3M PETRIFILM PLATES

Petrifilm Count Plates are a reliable ready-to-use medium system for enumerating bacteria populations. The plates contain dehydrated media nutrients, a cold water soluble gelling agent and a dye which facilitates colony enumeration. There is no need to make up media. Just prepare your sample dilution, inoculate 1 mL of sample homogenate (which resuscitates the dehydrated media) onto the plate, incubate 24-48 hours, depending on bacteria and read. The built-in grid makes the colonies easier to count. Petrifilm plates can be used as direct contact plates for environmental surface sampling as well as product testing.

There are seven types of Petrifilm Plates currently available in New Zealand:

- Total aerobic bacteria enumeration
- Yeast and mould enumeration
- Coliform enumeration
- *Escherichia Coli* (*E.Coli*) and coliform enumeration
- High sensitivity coliform enumeration (5 mL plate)
- Enterobacteriaceae
- Rapid coliform (4-8 hours)

Petrifilm plate methods have been collaboratively tested and adopted by AOAC and APHA and IDF. They are written up in MIRINZ Microbiological Methods Manual (*E.Coli*, Coliform and Enterobacteriaceae) and also in NZ Dairy Industry's NZTM2 Microbiological Methods Manual (Aerobic and Coliform). The Petrifilm manufacturing facilities meet FDA Good Manufacturing Practices (GMP) as well as ISO 9002 requirements. Each box of product has a quality assurance certificate as well as a lot control number. Petrifilm is manufactured under strict quality control procedures to virtually eliminate variations.

NEW PRODUCTS



Contact: Labsupply Pierce (NZ) Ltd
P O Box 34-234, Birkenhead, Auckland 10
Ph: (09) 4435867, Fax: (09) 4447314, Freephone 0800 734100
circle number 24 on the reader reply card

VERSATILE HEAT OR COOL REVERSE CYCLE WATERBATHS FROM SHAKA SCIENTIFIC



Shaka Scientific announces the release of a range of Reverse Cycle Waterbaths which operate over the maximum temperature range of -10°C to 75°C .

The Waterbath is constructed in corrosion-resistant 316 stainless steel, and the bath temperature is digitally controlled to within 0.1°C . The bath also incorporates an integral recirculating pump which is operated internally for isothermal experiments, and externally for equipment or vapour cooling. The Reverse Cycle

Waterbaths are available in 4, 8 and 20 litre capacities, in both Standard and Explosion-Proof versions, and also available as "Chillers Only".

Contact: Shaka Scientific Ltd
P O Box 87-071, Meadowbank, Auckland
Ph: (09) 5214044, Fax: (09) 5215032
circle number 25 on the reader reply card

GRAFFITI IN THE LAB



Laboratory staff know only too well how dull and dreary their workplaces often look. Laboratories are intended to be efficient, productive units and are designed with functional aspects in mind. This has the result of making the laboratory a relatively sterile and optically neutral environment... not exactly a very inspiring place to work!

HAAKE have now come up with an idea which goes completely against this trend. The new special edition Visotester VT550 features a colorful hand-painted design by the renowned air-brush artist Manfred Gelmar. Each unit is individually designed and can be painted to order. Every instrument is therefore an original and as such may well become a collector's item in years to come.

The VT550 features:

- Built-in measuring procedures
- Yield point measurement with CD
- Results documented to GLP
- Intrinsically accurate measurements
- Wide shear rate range due to 'MSC'
- True and friction-free torque measurement

Contact: Watson Victor Ltd
P O Box 1180, Wellington
Ph: (04) 3857699, Fax: (04) 3844651
circle number 26 on the reader reply card

AiM2000-SPS AUTOMATES REPETITIVE DILUTIONS

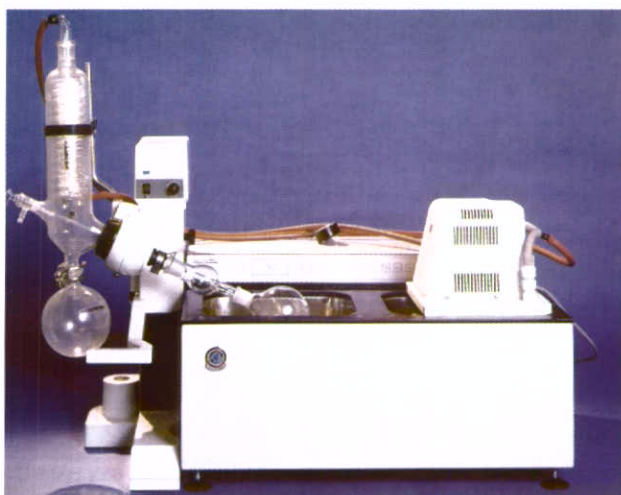


The AiM2000-SPS is a high capacity, high precision, automatic dilution and dispensing system that is manufactured in Australia by A.i. Scientific. The AiM2000-SPS features easy-to-use Windows operating software (Concord) that allows for the programming of customised applications. The software provides a robust and flexible controller that allows for easy starting of regularly-run routine methods. With a capacity of up to 540 sample positions and 20 standard positions the AiM2000-SPS will cater for the most demanding work schedules. To ensure consistent accuracy a high resolution syringe drive is standard and the syringe aspiration speed can be varied and controlled between runs. With the AiM2000-SPS samples can be aspirated

from any point in the vessel to avoid problems with interference from centrifuged particulates or flocculant. AiM2000-SPS can dispense samples from any height to ensure the probe exterior does not touch the dispensed sample. The flexibility of the AiM2000-SPS allows it to fit easily with a laboratory's existing sample preparation routine and to utilise existing sample racks.

Contact: Kevin Moloney, A.i. Scientific
P O Box 35579, Browns Bay, Auckland
Ph: (09) 4781351, Fax: (021) 788940.
circle number 27 on the reader reply card

CYCLOTHERM™: A MULTI-TASKING, DOUBLE BATH WITH WORKSTATION FROM SHAKA SCIENTIFIC



CO₂ Incubators

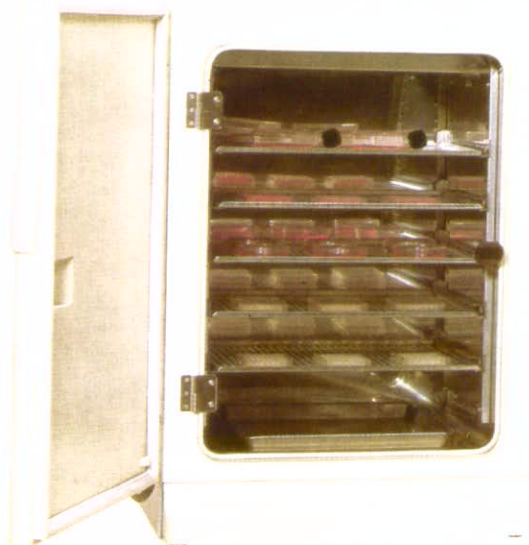
Sanyo's CO₂ incubators provide an ideal environment for cell culturing and are constructed to match the needs of modern laboratory professionals.

Features:

- Sanyo's new direct heat and air jacket system (DHA) includes side, top-door and bottom heaters
- Precisely controlled temperature with PID control and chamber-air sensing system.
- Chopper-less infrared CO₂ sensor and automatic zero calibration.
- Comprehensive counter measures against contamination, including fan motor/CO₂ valve automatic stop mechanism upon door opening, stainless steel chamber with rounded corners and automatic control door heater.
- One unit can be stacked on top of another using stacking kit.

Model MCO17A:

Temp. range: Ambient Temp. +5 °C - 50 °C
CO₂ range: 0 - 20%



Labsupply Pierce (NZ) Limited

127 Sunnybrae Road, Glenfield, Auckland
P O Box 34-234, Birkenhead, Auckland 10
Tel: (09) 443-5867, Fax: (09) 444-7314

Telephone Toll Free: 0800-734-100

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NEW PRODUCTS

CYCLOTHERM is a multi-tasking laboratory workstation that has been designed to be used for processes that require simultaneous heating and cooling such as distillation, reflux, Soxhlet extraction, and together with an aspirator pump, as a total companion to a rotary evaporator.

CYCLOTHERM has two baths (cold and hot) whose temperatures can be independently controlled to within 0.1 °C between ambient, and 0 °C and 75 °C respectively. The cold bath incorporates an integral recirculating pump which may be used either internally for constant temperature experiments, or externally for vapour or equipment cooling. Also, the cold bath will accommodate commonly available aspirator pumps for rotary evaporation. The hot bath incorporates an optional magnetic stirrer which can be used for constant temperature experiments or vacuum distillation.

CYCLOTHERM is a fully self-contained heating and cooling system which requires no fixed plumbing, and performs evaporation and condensation with significant water and energy savings. CYCLOTHERM is available with 8 x 8 litre baths (DB88), or with 4 x 4 litre baths (DB44), in Standard and Explosion-Proof versions.

Contact: Shaka Scientific Ltd
P O Box 87-071, Meadowbank, Auckland
Ph: (09) 5214044, Fax: (09) 5215032
circle number 28 on the reader reply card

REVOLUTIONARY COLUMN CONNECTOR SIMPLIFIES GC COLUMN INSTALLATION!

The biggest revolution in GC technology is now available. Connex - "The Quick Column Connector" - is a new technology that significantly reduces column installation time. Superior to metal, fused silica and glass connectors, Connex capillary column connectors provide a leak-free, inert reusable connection that can be connected or disconnected instantly.

No time consuming measuring. No messy gluing. Just quick reliable connection. It will change the way you think about column installation forever.

Connex kits for use with most leading brands of GC and GC/MS are available. For more information on this historic new product or any other products from J&W Scientific - *the low bleed leader*:

Contact: Clare Hodgson, Shimadzu New Zealand
P O Box 45077, Auckland 1230
Freephone: 0800 735725, Fax: (09) 8360668
circle number 29 on the reader reply card

INFORMATION ON DETERMINATION OF THE MOISTURE CONTENT

Parallel to the worldwide launch of its new "Halogen Moisture Analyser", Mettler Toledo AG is publishing a detailed brochure (63 pages) which provides specialised, practice-oriented background information on moisture determination in

substances. It contains tables, text and plots which provide an overview of the measurement methods in use today. The topics considered range from the classical drying-oven method to the infrared method, the new drying method using halogen light, spectroscopic methods and the Karl Fischer method. The brochure also provides detailed information on suitable planning of the sampling and sample preparation in operations with the new Halogen Moisture Analyser and how the drying parameters can be optimally matched to the various problems. A case study illustrates how the correct instrument setting can be quickly identified. Application examples developed by the company round off this pocket brochure.

Contact: Watson Victor Ltd
P O Box 1180, Wellington
Ph: (04) 3857699, Fax: (04) 3844651
circle number 30 on the reader reply card

INTEGRATION OF BALANCES AND SCALES IN SYSTEMS

The growing importance of quality management systems and the rapidly changing trading conditions are influencing the aspects of system compatibility, flexibility and data security in the purchase of laboratory instruments with ever increasing frequency. These are the very requirements met by the future-oriented LocalCAN universal interface from Mettler-Toledo AG.

Matched to the needs of the modern laboratory, LocalCAN is built into all precision balances of the so-called "Professional" and "Standard Levels" of Mettler-Toledo AG. The simple and economical "Basic Level" balance can also be retrofitted with LocalCAN if required. LocalCAN is not only compatible with the classical industry standard RS232, but can also meet future interface standards.

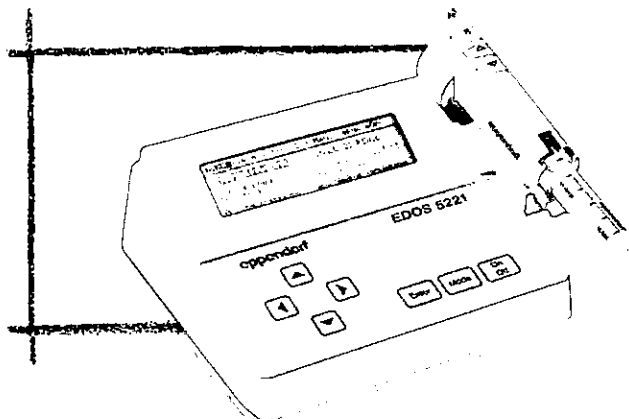
In contrast to a simple RS232 interface, the LocalCAN universal interface allows the simultaneous attachment of up to 5 peripheral devices to a balance. For example via LocalCAN a balance can simultaneously control a printer, receive the data of a bar-code reader for sample identification as well as communicate bidirectionally with a PC or host of an LIMS (Laboratory Information and Management System). The compatibility among the different balance types is ensured by fully standardised interface commands.

Rugged plug-in connections guarantee operation free from malfunctions and the installation is remarkably simple. For the system planner, the modular concept of LocalCAN thus means long-term constancy with the necessary flexibility and hence protection of the capital investment.

Contact: Watson Victor Ltd
P O Box 1180, Wellington
Ph: (04) 3857699, Fax: (04) 3844651
circle number 31 on the reader reply card

EPPENDORF EDOS 5221 THE ELECTRONIC DISPENSING SYSTEM

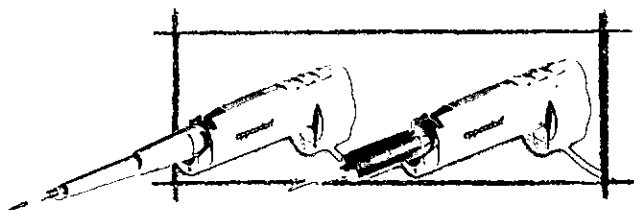
EDOS is the electronic dispensing system with simple solutions to complex tasks in liquid handling.



EDOS pipettes, dispenses, dilutes, titrates and mixes. It is extremely versatile and solves almost all dispensing tasks in the laboratory. Aqueous solutions, biological liquids (e.g. blood or serum), suspensions, alcohol, solvents and all kinds of organic liquids from highly volatile compounds, such as hexane or diethyl ether, to semi-viscous oils are dispensed with EDOS with utmost precision and accuracy. EDOS meets the highest demands on liquid measurement.

Multi-talented

- Variable volume selection from 0.5 μL to 50 mL
- Separate choice between eight settings for aspirating and dispensing speeds
- Control unit with user-friendly keypad
- Foot switch control (optional)
- Software provides clear user guidance
- Fully calibratable for solutions with different viscosities
- Automatic dispensing with programmable time intervals from 1 to 900 s
- 12 different volumes can each be repeated up to 99 times and in succession
- Storage of up to 30 routines per mode
- RS 232C interface
- Programming package for control via PC available



Variable Volume Selection

The ergonomically shaped dispensing grip of the instrument holds Eppendorf Combitips, renowned for their superior quality, and then functions as a positive displacer. Alternatively, pipette tips can be used employing pipetting and multi-channel adapters. This enables the unprecedented volume range from 0.5 μL to 50 mL to suit a wide variety of methods.



Masterly precision

- Dispensing grip with ergonomic design
- Automatic tip ejector
- 8-channel adapter available
- Fully calibratable for solutions with different viscosities
- Quality assurance document
- 1-year guarantee

Contact: Labsupply Pierce (NZ) Ltd

P O Box 34-234, Birkenhead, Auckland 10

Ph: (09) 4435867, Fax: (09) 4447314, Freephone: 0800 734100

circle number 32 on the reader reply card

COMBINED TGA-SDTA IN THERMAL ANALYSIS

Combined TGA-SDTA can be used to analyse and measure both weight changes and temperature differences in a wide range of materials as a function of temperature. The simultaneous measurement of both parameters allows an improvement in productivity, and the additional information provided by SDTA allows the detection of endothermic and exothermic effects without weight changes such as melting, crystallization and crystal transformations. The simultaneous measurement of both material properties in a sample assures absolutely identical experimental conditions.

The TGA850 measuring module from METTLER TOLEDO allows the simultaneous measurement and evaluation of TGA and SDTA signals. Thanks to a new type of temperature measurement directly below the sample crucible and automatic calibration with five or more metals, high temperature accuracy

can be achieved. The SDTA signal can be evaluated for semi-quantitative enthalpy measurements. These provide valuable information on the magnitude of the heat change.

The measuring module with a resolution of 0.1 µg, a dynamic measurement range up to 2000 mg (without switching) and a temperature range up to 1100 °C can be used in all fields, for example research, product development, service laboratories and quality control.

With the integration of a sample changer (optional) and the latest TA software, productivity can be increased markedly thanks to the automatic evaluation and assessment of the results. Detailed product documentation for the TGA850-SDTA with application examples is available.

Contact: Watson Victor Ltd
P O Box 1180, Wellington
Ph: (04) 3857699, Fax: (04) 3844651
circle number 33 on the reader reply card

LC-SWITCHBOX

Have you ever wanted to connect two balances with LocalCAN Universal Interface to one printer, e.g. the LC-P45? Mettler-Toledo have come up with a solution. Known as the LC-Switchbox it will allow up to three balances or weighing platforms (R scales or S platforms) to be connected to one peripheral unit, e.g. printer, R-terminal, computer or auxiliary display via the LocalCAN Interface. Whether balance/scale A, B or C is connected depends on the position of the rotary switch and is signalled by lighting up of the appropriate lamp.

Further, the box can also be used when, for instance, a balance has to be connected to one of the three titrators or computers. There are thus practically no limits to the possibilities. To connect balances and scales to the LC-Switchbox, the LC-LC extension cables of the desired length (0.3 m, 1 m, 2 m or 5 m) are needed.

Contact: Watson Victor Ltd
P O Box 1180, Wellington
Ph: (04) 3857699, Fax: (04) 3844651
circle number 34 on the reader reply card

TWO NEW PR BALANCES WITH A HIGH WEIGHT PERFORMANCE

The Mettler-Toledo range of PR balances now includes a new model, the PR5003 Dual Range. This model with 1,010 g capacity and 1 mg readability in the fine range and a generous 5,100 g capacity with 10 mg readability in the coarse range is supplied with a high glass draft shield and sliding door as standard. It can be used in all cases where heavy samples have to be weighed with high accuracy, for example in the extraction of precious metals or generally in the weighing of other valuable materials. It should be noted that this is a dual range balance, i.e. the readability of 0.001 g is possible only for the first 1,010 g.

In addition to this balance, all PR2003 Delta Range balances will now be equipped with a 500 g fine range (instead of 400 g). The customer with the PM2500 can thus switch to a PR balance

without loss of capacity in the fine range and make full use of the advantages of the Professional Level such as FACT, alphanumeric identification of the sample, use of the bar-code reader as well as the built-in weighing applications.

Contact: Watson Victor Ltd
P O Box 1180, Wellington
Ph: (04) 3857699, Fax: (04) 3844651
circle number 35 on the reader reply card

HP INTRODUCES THE HP 5973 MSD, A SENSITIVE, PRODUCTIVE BENCHTOP MASS SPECTROMETER FOR ROUTINE ANALYSES

Medtec Products Limited is pleased to announce that Hewlett-Packard Company has introduced the HP 5973 Mass Selective Detector (MSD), a benchtop mass spectrometer that provides the sensitivity, improved up-time, easy maintenance and productivity that chemists performing routine qualitative and quantitative analyses have asked for. In designing the HP 5973 MSD, HP incorporated the enhancement requests made by HP and non-HP customers. HP used established customer-feedback processes as well HP-initiated primary market research.

Enhanced Sensitivity

HP designed the HP 5973 MSD to meet the current and future sensitivity needs of chemists detecting and measuring trace-level compounds in complex matrices. Examples include the analyses of pesticides in foods, volatile and semi-volatile organic compounds in drinking water, toxic compounds in air, and drug metabolites in bodily fluids.

In the electron ionisation (EI) selected ion monitoring (SIM) mode, the HP 5973 MSD provides femtogram-level sensitivity. For analyses performed in the EI full-scan mode, the system can generate library-searchable spectra with 1 picogram of octafluoronaphthelene. In full-scan modes for positive chemical ionisation (PCI) and negative chemical ionisation (NCI), the system provides picogram-level sensitivity.

Key sensitivity-enhancing features of the HP 5973 MSD include the following:

- New analyser components — The new high-energy dynode (HED) electron-multiplier detector enhances gain and incorporates improved ion optics to reduce noise. A new quadrupole design improves resolution and sensitivity.
- New PCI/NCI option — Certain classes of compounds, such as polyhalogenated samples, respond extremely well to NCI analyses. Detection limits are typically two to three orders of magnitude below those of EI mode.
- New short-capillary direct interface — The short-capillary direct interface, along with the appropriate temperature control, minimises sample degradation and loss of chromatographic resolution. Also, less column exposure to a high-temperature environment reduces the chemical background resulting from column bleed. There are no hot spots to degrade or cold spots to condense the sample. As a result, sensitivity is maximised.

NEW PRODUCTS

- **New programmable temperature vaporisation inlet (PTV)** — The PTV inlet offered with the HP 6890 Series GC expands the limits of GC/MS detection by allowing large-volume injections of up to 1 mL when used with the Gerstel injector. The PTV inlet also provides the gentle environment needed to reduce sample degradation. The inlet can be heated slowly to reduce thermal degradation of samples. In addition, the inlet's small internal volume and silico-steel deactivation minimise sample residence time, providing superior inertness.

Improved Up-time and Greater Productivity

HP designed the HP 5973 MSD to meet the productivity needs of laboratories striving to make optimum use of staff and equipment.

Key features that increase up-time, enhance ease of use and improve productivity include the following:

- **New choice of high-performance vacuum system** — A high-performance vacuum system with a 250 L/s turbomolecular pump is available for laboratories that prefer faster pump-down, greater pumping capacity and more column choices — a high pumping capacity allows the use of up to 0.32 mm ID columns and higher sample capacity. Quantitation accuracy does not degrade even with the high flow rates common to 0.32 mm ID columns. As a result, GC methods can be adapted more quickly to GC/MS.
- **New, independently heated ion source and quadrupole mass filter** — Independently heating the ion source up to 250 °C helps keep the analyser cleaner, longer, even when dirty samples are analysed. Because the system stays clean, it will maintain its calibration longer. As a result, the frequency of source cleaning is reduced, and system up-time is improved.
- **New easy-access analyser** — The hinged analyser rotates out of the vacuum manifold for easy access to its components. Chemists are not required to remove the GC column or the automated liquid sample tray to maintain the analyser. As a result, the ion source and snap-in, snap-out horn of the HED can be serviced readily or replaced if needed. The hinged analyser is designed to minimise the down-time associated with common maintenance procedures.
- **Automated, easy-to-use software** — HP's Microsoft Windows-based MSD ChemStation software automates routine instrument-control and data-interpretation tasks, thereby reducing the time required to learn the system and obtain useful results. For example, the MSD can be tuned automatically for general purpose EI operation. Integration and quantitation calculations also are performed automatically. Self-explanatory menu bars and a graphical user data-acquisition interface further simplify operation.
- **Mass range to 800 amu** — The mass range to 800 amu permits the analysis of higher molecular weight compounds. This makes it possible for chemists to analyse heavier crude ends, extractable fractions from hydrocarbon polymers, triglycerides and polyfluorinated compounds, all on an easy-to-use benchtop mass spectrometer.

Information about HP analytical products and services can be found on the World Wide Web at <http://www.hp.com/go/chem>

Contact: Medtec Products Limited
P O Box 34-241, Auckland
Ph: (09) 4806763, Fax: (09) 4806386
circle number 36 on the reader reply card

GBC AVANTA AA SPECTROMETERS

GBC Scientific Equipment is pleased to announce their newest range of double-beam atomic absorption spectrometers - the Avanta series. Designed around a modular concept, these instruments can be configured to exactly meet your analytical and budgetary needs. The basic instrument includes advanced features such as automatic optimisation of wavelength, slit width and setting of the lamp current. The instrument building blocks include a choice of lamp turret, gas control system, automatic burner rotation and Super Lamp power supply.

All configurations are controlled by the latest in Windows 95™ operating software. This new software package, which is also available as an upgrade to the 906, 908 and 909 range of instruments from GBC, offers unmatched power with simplicity of operation. As few as two mouse clicks are all that is required to start collecting results. Enhanced features include comprehensive report writing, multi-tasking, quality control protocols and simplified networking capabilities. Even the footprint of the instrument will be a pleasant surprise at just 86 cm x 55 cm: small enough to fit in even the most crowded laboratories.

Contact: GBC Scientific (NZ)
P O Box 68-330, Newton, Auckland
Ph: (09) 3735765, Fax: (09) 3600683
circle number 37 on the reader reply card

PITTCON '96 RELEASE FOR UPGRADED SRI GC

The new Model 8610C SRI Gas Chromatograph was introduced at *Pittcon '96*, Chicago. Like its predecessors, the 8610C can be fitted with up to 7 different detectors, and can have two separate injection systems. A major new feature is the larger 400 °C oven, and, as standard, Electronic Pressure Control. This feature, computer controlled by SRI's advanced PeakSimple data handling system, enables a pressure increase during injection to speed up sample flow onto the column, or at the end of the run to speed elution of 'high boilers' - flow rates can be changed from normal to high instantly, any time during the run.

Contact: GBC Scientific (NZ)
P O Box 68-330, Newton, Auckland
Ph: (09) 3735765; Fax: (09) 3600683
circle number 38 on the reader reply card

TEXTURE ANALYSIS AT AFFORDABLE PRICES

The new TA500 Texture Analyser from Lloyd Instruments, a world leader in materials testing equipment, has been introduced into New Zealand by the Lloyd distributor, GBC Scientific (NZ). With an accuracy which exceeds the requirements of

NEW PRODUCTS

BS1510:Part 1:1192, the TA500 is microprocessor controlled, and operates under DOS or Windows or via an optional console control.

User-definable test methods can easily be established with single or up to 30 test stages. Selectable units are available for all graphs and result calculations.

At a price well below other texture analysers on the market, the Lloyd TA500 offers texture quality improvements to many sectors of the food industry, for QC, process and production control, and development.

Configured with industry standard probes or fixtures and PC software or optional console control, the TA500 is the solution for many food industry texture analysis applications:

- Bloom Strength
- Elasticity
- Chewiness
- Snap Strength
- Gumminess
- Spreadability
- Extrusion Force
- Stickiness
- Cohesiveness
- Hardness
- Springiness
- Crispness

Backed by superior service facilities, GBC Scientific (NZ) can supply additional information on this instrument, or even arrange for a demonstration on-site.

Contact: GBC Scientific (NZ)
P O Box 68-330, Newton, Auckland
Ph: (09) 3735765, Fax: (09) 3600683, Email: scitech@dunedin.es.co.nz
circle number 39 on the reader reply card

SCITECH APPOINTED DISTRIBUTORS FOR LABCONCO, USA

Sci Tech have been appointed distributors for Labconco, USA. Labconco manufacture a wide range of laboratory equipment which includes:

LABORATORY GLASSWARE WASHERS - a complete range offering flask scrubbing or steam scrubbing models with a size to suit your laboratory and budget. Labconco also provide companion products such as water softener and reverse osmosis stations for their glassware washers.

WATER PURIFICATION SYSTEMS - all water treatment systems are available including softeners, reverse osmosis systems, polishing stations and water quality to 16-18 megaohms. Whatever your water use, from rinsing glassware to demanding applications, Labconco have a water purification system to suit.

FREEZE DRYER SYSTEMS - Labconco's Lyph-Lock systems provide a capacity range from 4.5 L to 18 L with the reliability, flexibility and efficiency that this technique demands. After two decades, Labconco offer their fifth generation of freeze dryers with many user-friendly features and advantages of their digital Lyph-Lock freeze dry systems. Next time you need a freeze dryer, contact Sci Tech for information on Labconco and you'll be pleasantly surprised by the performance of these CFC-free freeze dryer systems.

LAMINAR FLOW CABINETS - Labconco's vertical flow biohazard safety cabinets protect the product and the worker and their Horizontal Clean benches protect the product. A size and price to suit all applications and budgets.

LABORATORY FUME HOODS AND BLOWERS - such a vast range of enclosures at very competitive prices have not been offered in New Zealand before. Labconco enclosures are designed to protect users from inhaling chemical vapours and have a wide range of accessories designed for efficient laboratory ventilation.

HISTOLOGY/PATHOLOGY WORK STATIONS - Labconco have specifically designed enclosures which rid the laboratory of noxious solvent vapours. If you work with any of these types of solvents, fixatives etc. then you must be protected and Labconco have an enclosure to suit.

PROTECTOR GLOVE BOXES - enclosures that provide a physical barrier between the product and the worker or environment. Labconco have several models from which to choose and accessories include atmosphere control - sometimes called a dry box.

TISSUE CULTURE/PCR ENCLOSURES - this range provides a non-ventilated, circulation-free work area designed to reduce cross-contamination in a variety of laboratory applications. Uses include tissue staining, culture growth and virus harvesting.

CENTRIFUGAL CONCENTRATORS AND COLD TRAPS CentriVap systems are designed to rapidly concentrate multiple biological samples. There is a system designed for DNA samples as well as aqueous, acid or solvent-based applications. A cold trap option ensures Labconco has the instrument you need. The RAPIDVAP uses nitrogen gas with vortex motion and dry heat to speed evaporation of solvents and can handle samples up to 450 mL/tube. Whatever your sample concentration requirements, Labconco have the answer.

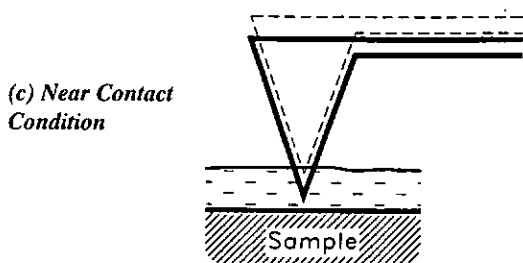
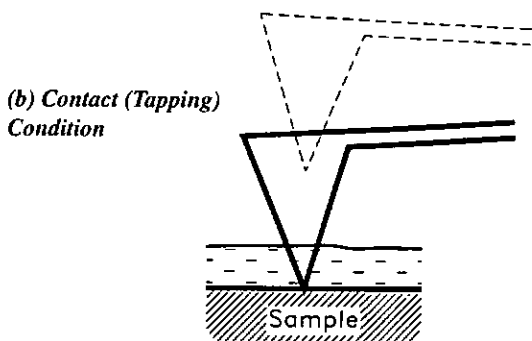
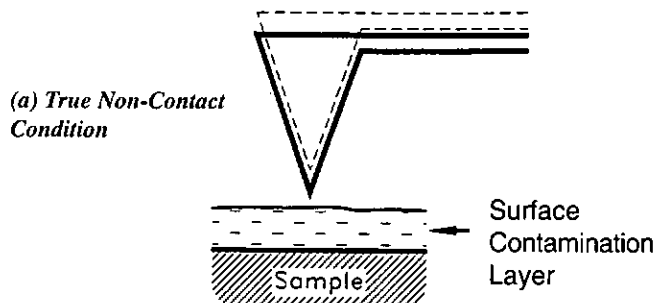
ROTARY EVAPORATORS - a complete range is available with new models being released during 1996. For the latest information please contact your local Sci Tech office.

DESICCATOR CABINETS - enclosures for storing laboratory materials under low-humidity conditions. Constructed out of a one-piece seamless durable fibreglass body providing a cubic foot of contamination and corrosion-free space for cooling, drying and storage of moisture sensitive materials.

Contact: Sci Tech
P O Box 663, Dunedin
Ph: (03) 4777860, Fax: (03) 4777870, Email: scitech@dunedin.es.co.nz
circle number 40 on the reader reply card

**FOR A QUICK, NO-FUSS REPLY . . .
REQUEST FURTHER INFORMATION,
PRICING DETAILS ETC.,
USING THE FREEPOST
READER REPLY CARD**

TOPOMETRIX ANNOUNCES NEW NEAR CONTACT TECHNIQUE FOR ATOMIC FORCE MICROSCOPES



*AC Mode AFM in Air
Three Different Operating Conditions*

TopoMetrix Corporation announces a new technique in imaging for atomic force microscopes (AFMs) - the Near Contact™ operating mode. Near Contact provides higher resolution than non-contact mode and will not damage or alter sensitive samples, as contact mode can often do.

The Near Contact technique provides non-destructive, high-resolution imaging of a sample surface on the nanometer scale. Users can now get high-resolution images of soft samples without altering them and of hard samples without damaging the AFM tip.

Physically sensitive samples such as polymers, cells, photoresist, and thin-film coatings can now be imaged repeatedly without deterioration of image quality and without damage to the sample. Also, physically hard samples, such as silicon wafers, semiconductor devices, metals, and minerals, can be repeatedly imaged at higher resolution without damaging the AFM tip. In Near Contact mode, the probe tip does not actually contact the

sample. The tip comes close enough to the sample to penetrate the contamination layer and get the best resolution possible—without damaging the sample or probe tip in any way.

Near Contact mode can be used on all new or existing TopoMetrix TMX Series™ AFMs. TopoMetrix's AFMs feature premounted and inspected cantilever and tip assemblies, convenient imaging site selection with high-resolution optics, a sample translation stage, crash-free tip approach through computer control, user-selectable scan size, and a Windows™ software platform. They also offer complete network capabilities.

Contact: Sci Tech
P O Box 663, Dunedin
Ph: (03) 4777860, Fax: (03) 4777870
circle number 41 on the reader reply card

IEC ANNOUNCE THE NEW EC SERIES OF BENCH TOP CENTRIFUGES

IEC have released the latest in their line of competitive benchtop centrifuges - the EC series. This new line offers users a choice of four different models providing four-place and six-place rotor options, ambient and refrigerated options. As the EC name suggests, this new line is **ECONOMICAL**. Bundled accessories with high performance specifications including higher tube capacity, aerosol containment and extremely low cost cooling options, mean the EC series sets new standards for price/performance yet retains the IEC safety and quality that we have come to take for granted.

Contact: Sci Tech
P O Box 663, Dunedin
Ph: (03) 4777860, Fax: (03) 4777870, Email: scitech@dunedin.es.co.nz
circle number 42 on the reader reply card

MICROWAVE-ASSISTED PROTEIN HYDROLYSIS

Milestone now has the capacity of doing microwave-assisted protein hydrolysis in their MLS-Mega Microwave base units.

- *Saves time: 45 minutes instead of 24-72 hours!*
The total hydrolysis time is much less than the normal analysis time. Milestone completes the procedure in less than 45 minutes.
- *Uniform process conditions*
All samples are processed under equivalent temperature conditions dramatically improving reproducibility in analytical data.
- *Inert anaerobic environment*
The hydrolysis is performed under inert, anaerobic conditions so as to avoid oxidative degradation of amino acids. Milestone uses a special VS-5 valve that enables operation under vacuum and with nitrogen to maintain inert and anaerobic conditions through the process.
- *No contamination*
The hydrolysis is carried out in a quartz vial that can be directly used by the HPLC autosampler, therefore eliminating any possible contamination or analytical loss.

NEW PRODUCTS

- *Control of hydrolysis conditions*

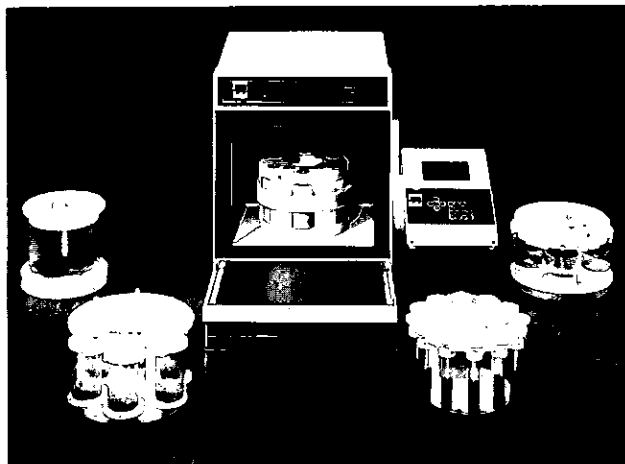
The continuous monitoring of the temperature allows the operation in controlled and repeatable conditions.

- *Full safety*

The patented MDR technology has been used for several years for applications much more dangerous than hydrolysis with diluted hydrochloric acid at 160 °C.

- *Easy operation*

Softwave software enables complete setting of all hydrolysis parameters with stored methods for even easier start up.



Contact: Trish Fenton, Peter Hassan and Stuart Tyler
Alphatech Systems Ltd & Co.
P O Box 37-583, Parnell, Auckland
Ph: (09) 3770392, Fax: (09) 3098514
circle number 43 on the reader reply card

ALPHATECH ANNOUNCES NEW REPRESENTATION IN MASS SPECTROMETRY FOR BENCHTOP GC AND LC

Following the recent sale of Fisons Instruments to Thermo Electron group of companies, Alphatech has been selected to represent Masslab and Finnigan in New Zealand.

Masslab, based in Manchester, UK, has been producing the MD range that are recognised as simply the best GC benchtop quadrupoles available. Masslab are also due to launch the latest LC benchtop quadrupole called the Navigator later this year. This is a dedicated electrospray quadrupole mass spectrometer with a mass range of 1600 amu, ideally suited for high-throughput screening laboratories.

Finnigan, based in Germany and the USA, has been a world leader in mass spectrometry for many years and was the first to commercialise Ion Trap mass spectrometers. The Ion Trap technology enables researchers to do powerful multi-stage mass spectrometry theoretically to an infinite number of stages (MSⁿ).

The launch in 1995 of the LCQ and GCQ provided breakthrough technology in benchtop mass spectrometry enabling GC/MS and LC/MSⁿ.

The selection of which technology that best suits your laboratory's requirements depends on what your applications are going to be.

Contact: Stuart Tyler, Mass Spectrometry Product Specialist
Alphatech Systems Ltd & Co.
P O Box 37-583, Parnell, Auckland
Ph: (09) 3770392, Fax: (09) 3098514
circle number 44 on the reader reply card

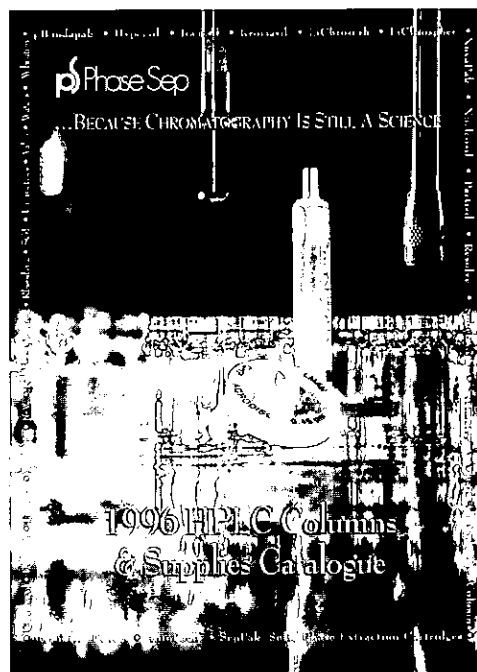
CYROGENIC DEWARs AND SHIPPERS

Custom BioGenic Systems from the USA offer a wide range of cryogenic storage vessels, dewars, vapour shippers and liquid nitrogen dry-shippers and transport containers. Complementing this they also offer liquid nitrogen freezers with inventory systems to take advantage of their vessels providing maximum storage capacity. CBS also manufacture a complete range of low temperature freezer inventory systems which suit any brand of freezer. Racks, boxes and dividers manufactured from a variety of materials to suit your specimens, You'll actually get more in the same space with CBS inventory systems so contact Sci Tech for the details now.

Contact: Sci Tech
P O Box 663, Dunedin
Ph: (03) 4777860, Fax: (03) 4777870, Email: scitech@dunedin.es.co.nz
circle number 45 on the reader reply card

PHASE SEPARATIONS

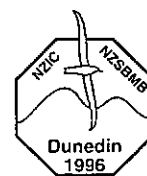
Alphatech Systems are pleased to offer chromatography columns, supplies and accessories from Phase Separations after their recent acquisition by Waters. Phase Separations is structured to be a single-source supplier and include high quality brand names as well as their own well-known Spherisorb packing material. Phase Separations have just released their 1996 catalogue containing product information as well as extensive application advice.



Contact: Alphatech Systems Ltd & Co.
P O Box 37-583, Parnell, Auckland
Ph: (09) 3770392, Fax: (09) 3098514
circle number 46 on the reader reply card

Molecules for the Future '96

National Conference of the New Zealand Institute of Chemistry and
the New Zealand Society for Biochemistry and Molecular Biology



University of Otago, Dunedin, New Zealand
2 - 6 December 1996

The New Zealand Institute of Chemistry and the New Zealand Society for Biochemistry and Molecular Biology are pleased to extend an invitation to attend this conference. Participants will assemble in Dunedin on Monday 2 December and the meeting will close on the afternoon of Friday 6 December.

The conference will emphasise many aspects of chemical and biological science and is organised around three major themes: Analytical Chemistry; Biological Chemistry; and Colloids, Surfaces and Materials. In addition, lecture and poster sessions will represent the interests of various specialist groups from within the Institute of Chemistry and the Society for Biochemistry and Molecular Biology. A highlight of the conference will be a symposium on Chemical and Biological Hazards to be held on Friday 6 December. This will be targeted at scientists working in the education sector, public bodies, government departments, chemical and biological industries and academic research.

Venue

The conference will be held at the University of Otago, with lecture and poster sessions centred around the Castle Lecture Theatre complex. Delegates and accompanying persons will also have an opportunity to explore the many natural, historical and cultural attractions of Dunedin city.

Registration

All persons attending the conference must register in advance. The registration deadline is 15 October 1996. Late Registrations may be accepted up to 15 November 1996 on payment of a surcharge. Applications should be made as early as possible on the **Registration Form** which can be found on pages 45/46 or obtained from:

Dr R M Carr

Department of Chemistry

University of Otago

P O Box 56 Dunedin, New Zealand

Tel: +64-3-4797908

Fax: +64-3-4797906

e-mail: nzicconf@alkali.otago.ac.nz

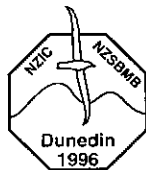
Applications should be returned by 15 October to the above address. Payment by Credit Card (Bankcard, MasterCard or Visa) is permitted for all applicants. Payments must be made **IN FULL** by completing and signing the appropriate section of the Registration Form.

All Registration forms and remittances received will be acknowledged. **Tickets for functions and final programmes will not be sent out in advance.** This material, together with a list of participants, badges and any last minute information, should be collected by participants at the Registration Desk on arrival. The Registration Desk will be located in University College from 4.00 pm on Monday 2 December. It will reopen in the Castle lecture theatre at 8.00 am on Tuesday 3 December.

Registration Fees

	Registration by 15 Oct	Late Registration by 15 Nov
Full participant (NZIC/NZSBMB Member)	\$160	\$200
Full participant (not NZIC/NZSBMB Member)	\$200	\$240
Student participant (NZIC/NZSBMB Member)	\$ 30	\$ 40
Student participant (not NZIC/NZSBMB Member)	\$ 60	\$ 80
One day registration for Symposium on Chemical and Biological Hazards (Not required for Conference Registrants)	\$ 30	\$ 40
Accompanying person	NIL	NIL

The special Registration fees for NZIC/NZSBMB members also apply to members of the RACI, ASBMB and other equivalent professional bodies. A Registration may be cancelled by writing to the Conference Secretary. Fees will be fully refunded if notification arrives before November 15 1996. Applications may be cancelled up to November 30 1996, in which case a partial refund will be made for fees already paid. It will not be possible to refund any fees if cancellations are received after this date.



Molecules for the Future
NZIC/NZSBMB Conference
University of Otago, Dunedin
2-6 December 1996

Chemical and Biological Hazards Symposium

Friday 6 December

The programme is as follows:

9.00 am Opening – Dr D McGregor – Chief Scientist – MoRST

Hazardous Substances and New Organisms Legislation
Dr S Vaughan and Dr A Moeed, Ministry of the Environment

Resource Management Consents – Monitoring Airborne Releases of Chemicals
Dr B Graham, Works Consultancy Services – Environmental

Morning Tea

Genetic Engineering *Professor G Petersen*
Calici Virus *Associate Professor F Griffin*
Field Release of Genetically Engineered Organisms *Dr C Ronson*

Lunch

Cut Out Chlorine and Count the Cost *Professor J Emsley*

Hazardous Waste Technology – Chemical and Microbiological
Mr J Campbell, Waste Solutions

Destruction of Chemical and Biological Weapons *Dr J Fountain*

3.30 pm Closing Remarks

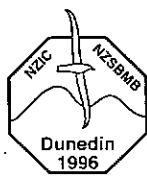
This programme is part of the New Zealand Institute of Chemistry and New Zealand Society for Biochemistry and Molecular Biology Conference but separate registration is available at NZ\$30 for this symposium. It has been designed to inform professionals, teachers and persons needing a generic knowledge of hazardous substances (e.g. Local and Regional Council Employees). The Trades Display will operate until 1.30 pm and a light lunch will be available at a small charge to registrants for the symposium.

Information:

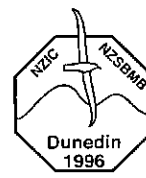
Dr Wayne Temple
National Toxicology Group
University of Otago
P O Box 56, Dunedin
Phone: (03) 4797244
Fax: (03) 4770509
Email: wtemple@gandalf.otago.ac.nz

Registration:

Dr R M Carr
Chemistry Department
University of Otago
P O Box 56, Dunedin
Phone: (03) 4797932
Fax: (03) 4797906
Email: nzicconf@alkali.otago.ac.nz



Molecules for the Future



**National Conference of the New Zealand Institute of Chemistry
and the New Zealand Society for Biochemistry and Molecular Biology.**

**University of Otago, Dunedin, NEW ZEALAND
2-6 December 1996**

Registration Form

The completed form should be sent to:

Dr R.M. Carr
Conference Secretary
Department of Chemistry
University of Otago
DUNEDIN

Phone : 03-479-7908
FAX : 03-479-7906
e-mail : nzicconf@alkali.otago.ac.nz

arriving no later than 15 October 1996 for normal Registration, or 15 November 1996 for late Registration.

Family name: Initials: Title:

Address:

Telephone: Fax: E-mail:

Number of accompanying persons:

Name(s) for the conference badge(s):

Participant category : full / student Will you be presenting a paper/poster?

Name and signature of supervisor if participant is a student:

Name Signature

Conference Fees

Registration Fee (Full participant) \$

Registration Fee (Student participant) \$

Registration for the One Day Symposium on Chemical and Biological Hazards; not required for conference Registrants \$

Details of the Registration fees are given on page 2 of the Second Circular. N.B. If payment is made after 15 October 1996 but before 15 November 1996 please pay the appropriate Late Registration fee(s)

Conference dinner @ \$40 Number attending \$

TOTAL \$

Method of payment: **By cheque;** payable to NZIC Conference.

By Credit Card - Please charge my credit card.

Name as written on card:

Bankcard MasterCard Visa

No.: Expiry :

Signature: Date:

Accommodation at University College* Number of persons

Arrival date Departure date

Excursions (Wednesday 3 December)

Please indicate by ticking the appropriate box below if you wish to book on any of the following excursions.

Albatross, Yellow-eyed penguin visit Otago Excursion Train

Harbour Cruise Visit to Macraes gold mine

Do you require information for accompanying persons' activities? Yes/No

Participant Categories :

Full participant

The full Registration fee entitles the participant to a program and book of Abstracts, entry to all lecture, exhibition and poster areas, entry to the mixer, and refreshments at poster sessions. Attendance at the Symposium on Chemical and Biological Hazards is included in this Registration fee.

Student participant

A person enrolled in full-time study is entitled to register as a student participant with the same entitlement as a full participant. To be accepted in this category, the Registration form must be signed by the students supervisor.

Accompanying persons

An accompanying person may be registered only with a full or student participant. An accompanying person is entitled to request accommodation at University College at conference rates, and to attend the mixer.

Scientific Programme

The conference will feature plenary lectures by a number of distinguished scientists whose research covers the major themes of the conference. A number of symposia have also been arranged within the general conference themes as indicated in the Table below. Each of these symposia will include keynote lectures (30 min.) and shorter (20 min.) orally presented papers. Speakers who have accepted invitations to present plenary and keynote addresses include:

Theme	Plenary	Keynote
Conference Lecture	Dr John Emsley, <i>Imperial College London</i>	
Chemistry and Climate Change	Professor Peter Liss <i>University of East Anglia</i>	Dr Martin Manning <i>NIWA Wellington</i>
Analytical Chemistry		Professor Alan Bond <i>Monash University</i>
Environmental Chemistry		Professor Don Macalady <i>Colorado School of Mines</i>
Protein Structure and Function	Professor Bill Cullen <i>University of British Columbia</i> Dr Jenny Martin <i>University of Queensland</i>	Dr Richard Simpson <i>Ludwig Institute of Cancer Research, Melbourne</i>
Plant Cell Walls	Professor Nick Carpita <i>Purdue University</i>	Dr Robert Redgwell <i>Hort Research, Auckland</i>
Plant Pigments	Professor Raymond Brouillard <i>Université Louis Pasteur</i>	Dr Tim Holton <i>Florigene, Australia</i>
Molecular Pathology		Professor Richard Faull <i>Auckland School of Medicine</i>
Microbial Eukaryotic Interactions		Professor Howard Jenkinson <i>University of Otago</i>
Cancer and Development		Dr Martin Kennedy <i>Christchurch School of Medicine</i>
Gene Structure, Function and Regulation		Associate Professor John Tweedie <i>Massey University</i>
Regulation of Gene Expression		Dr Chris Brown <i>Iowa State University</i>
Light and Molecules		Dr Brian Jordan <i>Crop and Food Research, Levin</i>
Colloids and Surfaces	Professor Roger Horn <i>University of Adelaide</i>	Dr William Ducker <i>University of Otago</i> Dr Roger Stanley <i>Industrial Research Ltd, Lower Hutt</i>
Spectroscopy and Theoretical Chemistry		Professor Ron Hester <i>University of York</i>
Energy		Professor Nigel Sammes <i>Waikato University</i>
New Materials		Professor Douglas Russell <i>University of Auckland</i>
Bio-organic Chemistry		Dr Brent Copp <i>University of Auckland</i>
Organic Synthesis		Dr Mick Sherbourne <i>Massey University</i>

ONE DAY SYMPOSIUM ON CHEMICAL AND BIOLOGICAL HAZARDS

Friday 6 December 1996

The following topics will be covered in 25-30 minute presentations by experts in the various fields:

- Chlorine in the environment.
- Hazardous Substances and New Organisms Act (update on developments including the development of the regulations).
- Monitoring of airborne releases of chemicals from industrial sites.
- Hazardous waste technology.
- Laboratory-based containment of genetically-engineered material.
- Field release of genetically-engineered organisms.
- Volcanic emissions.

A panel discussion of speakers will conclude the symposium. A special one day Registration is available for this symposium at a cost of \$30; attendance is included in Registration for the full conference. For further information on this symposium contact:

Dr W A Temple
National Toxicology Group
University of Otago
P O Box 56
DUNEDIN
Fax: (03)-4770509
Email: wtemple@gandalf.otago.ac.nz

Support for students

Some financial assistance is available to help full-time postgraduate students to attend this meeting. Chemistry students should check with their Head of Department for further details. NZSBMB student members are referred to the information given in *NZ BioScience* Vol. 4, No. 2 (May 1996), page 40.

Easterfield Lecture

The 1996 Easterfield Lecture will be presented by Dr Andrew Abell, University of Canterbury. The award is made to the New Zealand chemist under the age of 35 who has made the most distinguished contribution to research.

The Watson Victor Award 1996

This prestigious award is presented annually by Watson Victor Ltd to the biochemist or molecular biologist belonging to the NZSBMB who has contributed most to the advancement of the discipline over the previous year or so. The award consists of a NZ\$500 cash prize and a travel grant of up to NZ\$300, to assist the winner to attend the NZIC / NZSBMB conference and deliver the Watson Victor Lecture.

Student Paper Competitions

Separate competitions are to be held for NZIC and NZSBMB members. The NZIC competition is being arranged by individual NZIC branches. For further information on the NZSBMB competition see *NZ BioScience* Vol. 4, No. 2 (May 1996), page 40.

Trades Display

Scientific supply houses and publishers will display a variety of instruments, equipment and books at the conference. On Tuesday 3 December, Thursday 5 December and Friday 6 December, lunch will be provided for participants in the vicinity of the trade displays to allow an opportunity to examine the material on display and to discuss requirements with trade representatives.

Call for Papers

Participants are invited to submit abstracts on any aspect of chemistry, biochemistry or molecular biology with special reference to the topics of the symposia given above. In general, contributions will be presented as posters (poster board size 1.2 m high x 1 m wide). Participants should indicate whether they would prefer to present their paper orally (20 minutes, including discussion) or in a poster session. Prizes will be offered for the best posters in the Chemistry and Biochemistry and Molecular Biology sections. For further details on the NZSBMB poster competition see *NZ BioScience* Vol. 4, No. 2 (May 1996), page 40.

Abstracts should be sent to the Conference Secretary to arrive on or before 15 October 1996. Abstracts submitted by post should not be folded and should be sent in duplicate, one original and one copy. Abstracts should **not** be transmitted by fax machine. Abstracts prepared using Microsoft Word or WordPerfect wordprocessing programs may be submitted electronically by email either as Binhex or Uuencoded files or "attached" to the message at transmission time. Email submissions to: nzicabs@alkali.otago.ac.nz

The subject line of the electronic message should include the submitting author's name, fax number, and the name and version of the word processing program used to prepare the abstract, e.g. John Smith, 03-4791996, Word for Windows 6.1.

Except by special arrangement, each registered participant may submit only one abstract. There are no restrictions on co-authorship of abstracts submitted by others. Accepted abstracts will be included in the Conference Program only if the presenting author has registered for the conference.

Abstract preparation guidelines

Abstracts should be printed on one A4 page only, in 12-point type using 1.5 or double-line spacing. The abstract text and figures should be contained within a frame 150 mm wide by 230 mm long. The title of the abstract should be left justified followed by two blank lines and the authors names and addresses, with the name of the presenting author underlined. Diagrams, figures or chemical structure diagrams should be mounted on the abstract page.

Abstract book

A book containing the detailed scientific program and collected abstracts will be provided to registered participants at the conference. Copies will not be available prior to the conference.

Social programme

There will be a mixer on the evening of Monday 2 December at the University College beginning at 7.00 pm.

Light refreshments will be available during the poster sessions on the evenings of Tuesday 4 December and Wednesday 5 December.

The afternoon of Wednesday 5 December will be kept free for sightseeing and recreational activities. Visits are planned to the albatross colony, a yellow-eyed penguin sanctuary, and the Macraes gold mining operation. Harbour cruises and trips into central Otago on the Otago excursion train will also be available. As places in some of these activities will be limited, participants are urged to pre-book on the Registration form.

The Conference Dinner will be held on the evening of Thursday 5 December in the University Union.

Accompanying persons are warmly invited to participate in all of these functions. Apart from the Wednesday excursions, no formal programme is offered for accompanying persons. Dunedin offers a wide range of activities from stately home/castle/art gallery visits through museums to relaxing in gardens, on beaches or on golf courses. Further information will be provided on request and will be available from the conference desk or from the Dunedin Visitors Centre.

Notes on the Wednesday Excursions

The albatross colony at Taiaroa Head is the only mainland breeding colony of these giant seabirds. There is a gallery display and a colony viewing observatory.

The yellow-eyed penguin is an endangered species and its nesting/roosting habitat may be seen at Penguin Place.

The Monarch Otago Harbour Cruise allows viewing of the spectacular scenery of the harbour and peninsula, the breeding sites of albatross, seals, penguins, cormorants and other birdlife with emphasis on habitats, ecology and conservation.

The Taieri Gorge Train provides a relaxing and informative journey through history, rugged scenery (inaccessible by road), Victorian stonework and engineering examples unique to Dunedin.

Macraes Gold Mine, 1.5 hours drive from Dunedin, is a hard rock open cast mine with recovery plant employing froth flotation and cyanidation extraction processes. Cyanide disposal is effected in oxidation ponds.

125th Anniversary of the University of Otago Chemistry Department

1996 is the anniversary of the appointment of Professor Black as the first Professor of Chemistry. To recognise this important anniversary, various functions are being organised during the weekend following the Conference. In particular, there will be a dinner on Saturday 7 December which will also be the Department's end-of-year function. Class reunions will be facilitated. A warm invitation is extended to all graduates and ex-staff to join us for this weekend of activities. Special travel and accommodation deals are available.

Information can be obtained from:

Dr Allan Blackman
Chemistry Department
University of Otago
P O Box 56 Dunedin, New Zealand
Tel: (+64-3)-4797931
Fax: (+64-3)-4797906
Email: blackman@alkali.otago.ac.nz

Accommodation

Accommodation has been reserved at University College on the University of Otago Campus. The tariff is \$33 per night for bed and breakfast, single rooms only. Participants wishing to book accommodation in University College should fill in the appropriate section of the conference Registration form.

For travel reservations or Hotel/Motel accommodation bookings:

Brooker Travel

369 George Street
P O Box 6309
Dunedin

Phone: (+64-3)-4773383, Freephone: 0800-800630, Fax: (+64-3)-4771813
Email: brooker@voyager.co.nz

Brooker Travel have been appointed as conference travel agents and to coordinate motel and hotel accommodation. We would strongly recommend that you book such accommodation early as there are graduation ceremonies on during the weekends before and after the conference.

Airfares:

A group fare has been arranged with Ansett New Zealand. This allows discounts of up to 50% off the standard fare. Please note that these seats are limited so we advise participants to book early.

Brooker Travel can also book flights with Air New Zealand should you prefer.

Accommodation:

Brooker Travel can arrange accommodation in motels or hotels close to the University if required. When reserving accommodation please state if you require hotel or motel accommodation, your arrival and departure dates, how many people it is for and what type of room is required: i.e. single, double, twin etc.

Because the City is busy with other events on at the same time as the Conference, we suggest you give this your urgent attention. A \$50.00 deposit may be required to confirm your reservation. This will be advised at the time of booking.

Rental Cars:

Brooker Travel have arranged a Special Conference Rate with Budget Rent-A-Car. Rates start at \$72.00 per day for a small car. The rate includes unlimited kilometres, insurance and GST. Early bookings are advised.

Please Note:

When making your reservations please indicate your preferred form of payment, i.e. Cheque, Cash or Credit Card.

If required, Brooker Travel can issue an Invoice. If this is required, please state clearly the name and address to which the invoice should be sent.

* * * * *

LETTERS TO THE EDITOR

Dear Sir,

CHEMISTS WITHOUT HONOURS

In the recent Birthday Honours list, it seems that scientists, or more particularly chemists, were not even noticed by those who decide such matters. If we are serious about advancing the status of our profession, we must get more of our members honoured in this way.

The basic reason that more do not receive awards is the well-known one: "If you don't ask, you don't get"!

In the case of Honours, those doing the asking are not the ones getting the awards, but for the good of those currently in the profession, and for those to come, we must see that more nominations are made. The procedure is very simple - nomination forms are available from any office of Internal Affairs, the NZIC General Secretary, or from your local MP. Nominations may take many months to be considered, and if the person is not approved in one period, the nomination is carried forward (once) for consideration in the next group.

TO ALL BRANCH COMMITTEES: Please put this on the agenda of your next meeting. It should be easy enough to find at least one person to nominate in every Branch. The larger Branches should be able to make two or three nominations every year.

By being so honoured, younger members in mid-career can receive encouragement and reward, which cannot fail to make chemists more visible to the public, and hence advance the status of our profession.



C.L.H. Stonyer

10 Manly Gardens
Paraparaumu

An excellent suggestion, Lester, and one which should be acted upon. A Guide to Nominations for New Zealand Royal Honours is on page 45. - Ed.

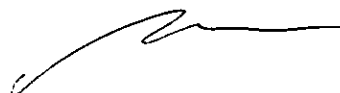
Dear Sir,

FOLLOW-UP TO A ? OF CHEMISTS

I was not sure whether or not a copy of the New Zealand input to our column in *Canadian Chemical News/L'Actualité chimique canadienne* had actually been sent to you. Therefore, I decided it would make sense for me to follow up and ensure that you are sent a copy of the magazine. We did receive input from your membership in both New Zealand and Singapore. From the attached extract from the journal, you will see that the final selection was an **aliquot** and that we also quoted one of your *poetic* chemists. I have a photocopy of the July 1995 issue of *Chemistry in New Zealand* and would appreciate a full copy of that issue.

Having had the opportunity to print one *Chemputing*, would *Chemistry in New Zealand* be interested in printing other reviews? As I do this as a volunteer Chemical Institute of Canada activity and I also own the copyright, there would be no charge. The columns are presently sent to Ottawa as WordPerfect and GIF or BMP graphics formats through the Internet. If you now have an Internet address, they could be sent just as easily to New Zealand.

Best regards



Marvin D. Silbert
Ph.D., P.Eng., C.Chem., FCIC

A copy of the extract from *Chemputing* is on the following page. I have written to Marvin Silbert to indicate our interest in further cooperation. (Copy of letter on following page) - Ed.

4th Annual RACI Research and Development Topics In Analytical Chemistry Meeting (9-11 December 1996)

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This conference provides a forum for young researchers in the area of analytical chemistry to present their work. We are now calling for expressions of interest from people who wish to be added to our mailing list.

Contact: Marie Bou-Raad
Secretary of the Organising Committee
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Fax: (+61-3)-96391321
Email: chem_rd96@bunyip.ph.rmit.edu.au

ALIQUOT is Tops!

At long last we have our collective noun for a "group of chemists". Henceforth, it shall be known as an ALIQUOT of chemists. The winning submission for the *Chemputing* contest came from Matthew Clark, a student at the University of Toronto and a former contributor to *Chemputing*. His choice of ALIQUOT was a clear winner. As his prize, Matthew receives the electronic edition of *Collins Dictionary of the English Language* (reviewed in *Chemputing*, ACCN, February 1995, p.4). Many thanks to WordPerfect for their support.

Please note that the *Collins Dictionary* gives the following meanings to the term aliquot as an adjective: [Maths.] of, signifying, or relating to an exact divisor of a quantity or number: "3 is an aliquot part of 12." consisting of equal quantities: "the sample was divided into five aliquot parts." and as a noun: an aliquot part. [from Latin: several, a few]

Len Walker, MCIC, added a note with his vote: "In Chemistry we use it as a noun as in 'an aliquot (sample) of a specimen', i.e. a representative sample."

Our contest was reprinted in *Chemistry in New Zealand*. I was pleased to see that one of their readers, Jim D Waters from the Ministry of Health in Wellington, was a match for our Walter Brown, FCIC, of Innovation Canada in Mississauga, ON. Both sent their votes in verse. We printed one of Walter's earlier poems in the June issue (p.6). Here is Jim Waters' vote:

*Canada's geese gaggle
And a herd's made of cattle
Whales form a pod
But soil's just in sod.
The Empire's now a Commonwealth of Nations,
While chemists bond in co-ordination*

It is hoped that *Chemputing* has opened a new era in Antipodal cooperation.

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Dr M D Silbert
Marvin Silbert & Associates
23 Glenelia Avenue
Willowdale
Ontario
Canada M2M 2K6

Dear Dr Silbert

Re: Follow-up to A ? of Chemists

Thank you for sending us a copy of the New Zealand input to your publication. Jim Waters sent me a copy of the entry he sent you but could you please send me a copy of the entry you received from our reader(s) in Singapore.

We are certainly very interested in publishing further material from *Chemputing* in *Chemistry in New Zealand*. Our email address is ancat@ihug.co.nz.

I look forward to further correspondence with you, and a new era of cooperation between New Zealand and Canadian chemists.

Best regards



Robert B Lyon
Managing Editor - *Chemistry in New Zealand*

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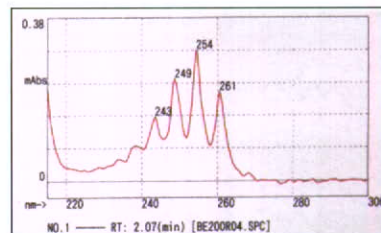
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