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NZIC Chemistry IN NEW ZEALAND

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Focus on Plastics, Resins, Paints, Coatings
Product Feature IR, Thermal Analysis, Viscosity

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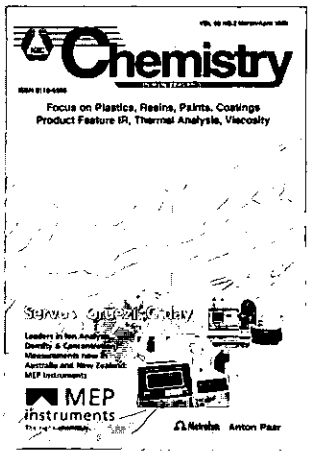
UP FRONT ...

Introducing . . .
MEP Instruments Ltd in New Zealand

This year sees substantial investment into New Zealand and Australia by two world leaders in instrument manufacture, Metrohm and Anton Paar, to establish MEP Instruments Ltd.



For further information see the cover story item on page 2

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The New Zealand Institute of Chemistry Incorporated
P O Box 39-283, Howick, Auckland, New Zealand
Phone: +64-9-5356495, Fax: +64-9-5353476
Email: NZICOffice@nzic.org.nz
WWW: http://www.nzic.org.nz
President: Assoc. Prof. G Clark, Hon Treasurer: Dr R S Whitney
General Secretary/Executive Officer: G Boston

Advertising Sales & Publisher:
Robert B Lyon
Ancat Holdings Limited
32 Murvale Drive, Bucklands Beach, Auckland
P O Box 38-546, Howick, Auckland, New Zealand
Phone: +64-9-5353475, Fax: +64-9-5353476
Email: chemistry@ancat.co.nz

Managing Editor:
Robert B Lyon
Ancat Holdings Limited
32 Murvale Drive, Bucklands Beach, Auckland
P O Box 38-546, Howick, Auckland, New Zealand
Phone: +64-9-5353475, Fax: +64-9-5353476
Email: chemistry@ancat.co.nz

IN THIS ISSUE ...

COMING UP ...

May 1999 - Food and Beverage Production and Research, HPLC, LC-MS, Sample Preparation

July 1999 - Timber, Forestry, Pulp & Paper Physical Testing, AAS, ICP-OES, ICP-MS

Deadline for material:
5th of the month of publication

Contributions and enquiries to:
The Editor,
Chemistry In New Zealand,
P O Box 38-546, Howick, Auckland, New Zealand
Phone: +64-9-5353475, Fax: +64-9-5353476
Email: chemistry@ancat.co.nz

COVER STORY

Introducing . . . MEP Instruments Ltd in New Zealand

Metrohm and Anton Paar Join Forces in New Zealand

This year sees substantial investment into New Zealand and Australia by two world leaders in instrument manufacture, Metrohm and Anton Paar, to establish MEP Instruments Ltd. The joint venture brings Metrohm and Anton Paar even closer to their many customers in the region and users will now gain the benefits of forming long-term relationships directly with the manufacturer. Several senior technical and marketing staff members from the respective production sites in Switzerland and Austria have relocated to Australia and along with some familiar faces form the heart of this commitment by Metrohm and Anton Paar to Australian and New Zealand scientists.

Ion Analysis - Quite Simply

Of all the companies manufacturing analytical instruments, only Metrohm offers systems for the entire field of electrochemistry.

Whether your titration requirement is for a complex automated system or a simple end point titrator, the Titrino family has the instrument to meet your application and budget. All Titrinos need very little bench space in your laboratory and operation is made simple by the multi-functional keypad. The perfect compliment to the Titrinos is the powerful and comprehensive Metrodata software. Developed by chemists for chemists, this software and the range of instruments, electrodes and reagents available from Metrohm provides complete answers to all your potentiometric or Karl Fischer titration problems.

Determining traces of inorganic substances to ppt levels is made easy by the VA Trace Analyser for universal use in polarographic and voltammetric techniques. In environmental analysis, quality control and process monitoring, the whole process can be completely automated including the sample preparation and data handling.

The latest generation of Ion Chromatography system allows the chemist to choose between the techniques "with" or "without" chemical suppression according to the particular application. The simultaneous determination of anions and cations can be easily achieved by the versatility and modular nature of the system.

Measurements of pH, ion and conductivity become routine with the well established and widely accepted meters from Metrohm. Chemists will find their ideal instrument in a range from user-friendly, compact and moderately priced pH meters to the most advanced pH and ion meters available.

The 56-page Electrode Catalogue is more than a specification sheet for the range of Metrosensor electrodes. Available on request and free of charge, it is designed so as to be easy to navigate and provides tips on the construction, handling, storing and testing of pH, metal and reference electrodes.

Density On The Plant Or In The Laboratory

Anton Paar is the father of the U-tube density meter. Over 31 years of expertise and continuing development have made the DMA series of density meters the standard for digital density measurement of liquid samples. The product range extends from the ultralight portable DMA35N, through the workhorse DMA4500 to the most accurate density meter, the DMA5000. A variety of sample handling units and accessories turn work into fun.

Quick And Easy Microwave Sample Digestion

For not quite so long, but still for more than 20 years, Anton Paar has been manufacturing sophisticated sample digestion systems. The HPA-S High Pressure Asher is acknowledged worldwide bot as the standard reference instrument as well as in daily routine analysis for wet sample digestion wherever the utmost analytical accuracy must be guaranteed and for AAS, ICP and voltammetry samples.

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circle number 1 on the reader reply card

NZ SCIENCE SCENE

STUDENT AWARDS AT IC'99

The Royal Society's sponsorship of IC'99, the joint meeting of the Inorganic Division of the Royal Australian Chemical Institute and the Inorganic Specialist Group of the New Zealand Institute of Chemistry, included four awards for students participating in the student poster competition. The following were presented with their awards for scientific and presentational excellence at the conference dinner on 4 February 1999:

- Joy Kerr, University of Otago
- Paul G Plieger, University of Otago
- Peter Richardt, University of Melbourne
- Jennifer M Weeks, University of Adelaide.

1998 NEW ZEALAND SCIENCE & TECHNOLOGY MEDALS

The Royal Society of New Zealand has announced the recipients of the 1998 New Zealand Science and Technology Medals. The medals recognise conspicuous and continuing contributions to science and technology by persons or groups or for outstanding contribution to the advancement of science and technology.

Gold Medal

- Dr William Robinson, CEO & Chief Engineer, Robinson Seismic Limited, Lower Hutt

Science & Technology Medals

- Dr William Allan, NIWA, Wellington
- Mr Alan Bennington, Dunedin College of Education
- Ms Barbara Benson, Dunedin College of Education
- Dr Kelvin Berryman, IGNS, Lower Hutt
- Dr Barbara Burlingame, Crop & Food Research, Palmerston North
- Dr Noel Burns, NIWA, Hamilton
- Mrs Christine Coles, CREST New Zealand
- Dr Fred Davey, IGNS, Lower Hutt, & Dr Tim Stern, Department of Geology, Victoria University of Wellington
- Dr Rob Davies-Colley, NIWA, Hamilton
- Ms Rosemary Du Plessis, Department of Sociology, University of Canterbury
- Dr Denis Dutton, Fine Arts Department, University of Canterbury
- Dr Jean Fleming, Department of Physiology, University of Otago
- Dr Yeap Foo, IRL, Lower Hutt
- Mr Howard Heap, NZ Dairy Research Institute, Palmerston North
- Dr Allen Heath, Mrs Dallas Bishop & Mr David Cole, AgResearch, Wallaceville
- Mr Denis Hogan, Editor, *ChemNZ*
- Mr Lloyd Homer, Freelance Photographer, Te Marua
- Dr Clive Howard-Williams, NIWA, Christchurch
- Mr Albert Jones, Honorary Research Associate, Carter Observatory
- Mr Alan Mason, Honorary Historian of the Geological Sciences, Auckland
- Professor Anton Meister, Applied & International Economics Department, Massey University
- Professor Neil Pearce, Wellington School of Medicine
- Associate Professor Roger Reeves, Institute of Fundamental Sciences, Massey University
- Dr Russell Robinson, IGNS, Lower Hutt
- Dr Garth Smith, HortResearch, Hamilton
- Mr Donald St John, IRL, Lower Hutt
- Ms Katrina Stamp, Curator of Education, Auckland War Memorial Museum
- Mrs Patricia Watts, formerly Education/Community Relations Manager, BP Oil NZ Ltd, Wellington
- Dr Colin Wilson, IGNS, Taupo
- Dr Douglas Wright, retired of Hamilton (formerly Director, MIRINZ).

BAYER 1999 SCIENCE SPONSORSHIPS

Bayer New Zealand has announced the names of the eleven secondary schools which are to receive its 1999 Science Sponsorships. Each of the schools chosen is to receive funding and materials worth at least $3,500.

An additional $49,000 is being provided by Bayer under a tertiary scholarship scheme linked to its school sponsorship programme.

Announcing the names of the eleven successful sponsorship applicants, Bayer's Managing Director, David Hope-Cross, said his company's backing for scientific education was aimed at helping to change the priority New Zealanders give to science.

"Compared to most other developed countries, we place a very low value on our scientists. There is an obvious shortage of funding for science education at both secondary and tertiary level, just as there is for research and development. This tendency to down-play the role of science and of scientifically-trained people can be found at all levels of our national life, including business.

"Yet, in a very real sense, we are a nation built on science. Grassland and veterinary scientists developed the plant and animal strains on which our economy was based. More recently, science has give us improved horticultural products, which have been successfully exported to markets around the world. We now need very substantial numbers of new scientists and technologists. But we continue to produce the developed world's lowest per capita percentage of these and its highest per capita percentage of accountants," he says.

The eleven schools chosen for sponsorship this year all share our commitment to science. They are all doing tremendous work and are inspiring their students with a love and appreciation of scientific subjects. We are pleased and proud to be able to help them with their work," Mr Hope-Cross adds.

The eleven schools chosen to receive 1999 Bayer Science Sponsorships are: Auckland Girls' Grammar School, Chanel

College (Masterton), Darfield High School, Gisborne Girls' High School, Glenfield College, Mt Maunganui High School, Otago Girls' High School, Rangiora High School, Sacred Heart College (Lower Hutt), Taipa Area School (Mongonui) and Wanganui Girls' College.

The schools were chosen by College of Education staff from throughout New Zealand on criteria which include commitment to science studies, need for resources, understanding of the curriculum and vision for the future.

Each of the sponsored schools is to receive $2,500 worth of scientific resources of its own choice, along with a DNA Helix model and $200 worth of Agfa photographic product. In addition, it will gain a complete set of the much sought-after Satis Resource Books. Imported from the United Kingdom, these books are widely regarded as invaluable for science teaching but are beyond the resources of many schools.

Along with the sponsorship comes the right to nominate a student for one of five tertiary scholarships, provided by Bayer for promising young scientists. Each scholarship is worth $2,200 per year and lasts for the duration of the students undergraduate course.

Bayer New Zealand's Science Sponsorships are now in their seventh year and have become recommended practice for other Bayer companies around the world. In previous years, just ten schools were chosen. The number has increased to eleven this year in recognition of the very high standard of applications.

Strong praise for this year's applicants has come from Barbara Spurr, Secondary Science Adviser at Christchurch College of Education, who adjudicated applications in the Canterbury Region.

"This is the fourth year in which I've been involved with the Bayer Sponsorships and it has been an absolutely outstanding year".

"In part, this high standard reflects greater awareness of the Bayer Sponsorships amongst a wider range of schools. But it also reflects how schools are able to focus on what they want to achieve through their science programmes and on how, in order to make this happen, they have been involved in considerable teacher professional development," she says.

"On the other hand, the superb level achieved by this year's applicants should not discourage other schools from applying next year. Any school commitment to science which is able to formulate its goals and communicate its vision is definitely in with a chance," adds Barbara Spurr.

According to Kathy Saunders, Science Adviser to Secondary Schools from the University of Waikato's School Support Services, the Bayer Sponsorships are having a positive impact on many schools.

"This was my second year as a Bayer Sponsorship adjudicator, covering schools in the Waikato, King Country and Bay of Plenty. I discovered that there is keen competition for the Sponsorships and that the quality of the applications indicate a wide diversity of science activities being carried out in schools.

"The Bayer Sponsorships have become an important educational institution and are helping to achieve something very worthwhile," she says.

GREEN RIBBON AWARD

The Associate Minister for the Environment, Hon Marie Hasler, is seeking nominations for the 1999 Green Ribbon Awards. The winners of the awards are announced each year on World Environment Day (5 June).

The Green Ribbon Awards recognise outstanding contributions by individuals, organisations or businesses to protecting and improving the quality of our environment.

Nomination forms are available from the Communications Group at the Ministry (phone (04) 9177493). Nominations should be sent to the Associate Minister for the Environment, Parliament Buildings, Wellington by 30 April 1999.

HAZARDOUS SUBSTANCE START-UP DELAYED

Environment Minister Simon Upton has announced a delay in the start up of the new hazardous substances regime.

Scheduled for a 1 April 1999 start up, the final part of the HSNO Act and remaining regulations are now likely to come into force by mid-year.

The regulations, which include those which classify hazardous substances and control how they are managed, are being written by the Ministry for the Environment, Mr Upton said.

"While virtually all the regulations have been separately reviewed and checked by industry and experts as they have been written, we think it makes sense to provide a further opportunity to consider the package as a whole before it comes into effect.

"These are complex regulations and it is important to ensure consistency across the whole classification and control regime," the Minister said. "The experts need time to do a thorough job".

"It is worth delaying the start up by a few weeks so that the likelihood of teething problems can be reduced to a minimum," he said.

Steve Vaughan of the Ministry for the environment said industry representatives wanted to test the regulations in practice for their own industry, which could take about four to six weeks.

TWO TOP MAF APPOINTMENTS MADE

The Ministry of Agriculture and Forestry's Director-General, Dr Bruce Ross, has announced the two people who will lead the soon to be formed Food Assurance and Biosecurities Agencies within the Ministry.

The two agencies will formally begin on 1 July 1999 and will be made up of current MAF Regulatory Authority staff and associated Food staff from the Ministry of Health.

Dr Andrew McKenzie, currently Assistant Director-General/ Chief of the Regulatory Authority, will take up the position of

Assistant Director-General/Group Director Food Assurance Agency.

Dr Barry O'Neil, currently Chief Veterinary Officer within the Regulatory Authority, will take up the position of Assistant Director-General/Group Director Biosecurity Agency.

NIWA RESEARCH IN SOUTHERN OCEAN

A group of international scientists aboard the NIWA research vessel "Tangaroa" recently completed a month long voyage to the Southern Ocean, 2500 kilometres southwest of New Zealand, and 500 kilometres from the Antarctic ice. This poorly studied inhospitable region makes up 20% of the world's oceans and has a major influence on global climate. The scientists and crew of "Tangaroa" successfully fertilised a patch of this remote ocean with a seawater iron mixture in a bid to boost growth of microscopic plants, known as phytoplankton. Like forests and grasslands on land, these plants are believed to play a key role in reducing the build up of carbon dioxide in the atmosphere, which is causing global warming.

The results from the research voyage will make a major contribution to understanding how the earth's climate has changed in the past, and will aid predictions of how our climate may change in the future. This study has shown conclusively that lack of iron limits the abundance of marine life in the vast Southern Ocean, and therefore its ability to absorb atmospheric carbon dioxide. It also provides further evidence to support the theory that high amounts of iron in the Southern Ocean and low amounts of atmospheric carbon dioxide in past ice ages are linked. Higher phytoplankton growth in periods when the oceans were naturally fertilised with iron would account for the lower levels of carbon dioxide and the cooling of the earth.

NEW OCEAN AND ATMOSPHERIC CENTRE

An international centre for postgraduate ocean and atmospheric study is being established by The University of Auckland and the National Institute of Water and Atmospheric Research (NIWA). Co-directors of the new institute will be Professor Geoff Austin FRSNZ, Head of the Physics Department at The University of Auckland and Dr Rick Pridmore MRSNZ, Research Director at NIWA.

Aimed at MSc and PhD students, courses will cover a range of research including atmospheric chemistry, meteorology, climatology, oceanography, fisheries science and management, and aquaculture.

TEACHER STATISTICS

Recent research released by the Ministry of Education shows that 71% of our teachers (primary and secondary) are female, 37% aged between 40-49, and 97% were registered or working towards registration. 8% are Maori, 2% of Pacific Island origin, and 2% are Asian.

77.8% hold qualifications in the humanities or social sciences, 43.6% in education, 36.7% in sciences, 22% in mathematics, 9.7% in fine arts, 13.4% in commerce, 10.8% in recreation/sport, 10.5% engineering/industrial and 9.9% in languages. 52% hold a bachelor's degree or higher. 88% had undertaken professional development within the past year.

While the increasing qualifications and high number involved in professional development augur well for the quality of teaching in New Zealand, the gender imbalance and the continuing lack of expertise and experience in science/maths/technology in primary schools, in particular, are still a matter of grave concern.

International News

IUPAC, IUPHAR, AND IUTOX PUBLISH A REPORT ON NATURAL AND ANTHROPOGENIC ENVIRONMENTAL OESTROGENS: THE SCIENTIFIC BASIS FOR RISK ASSESSMENT

The scientific underpinning for the controversial international concerns about endocrine disrupters has been addressed in detail in a recent issue of the journal *Pure and Applied Chemistry* (ref. Vol. 70, No. 9, 1998). This effort by three preeminent international scientific organisations covers a wide range of scientific aspects and subjects relevant to the issue and provides the background information necessary for informed debate.

The 19-chapter report, "*Natural and Anthropogenic Environmental Oestrogens: The Scientific Basis for Risk Assessment*" was prepared by the International Union of Pure and Applied Chemistry (IUPAC) in collaboration with the International Unions of Pharmacology (IUPHAR) and of Toxicology (IUTOX), and with the support of the International Council for Science (ICSU). The subject, commonly known as endocrine or hormone disrupters, is a complex, emotional, and controversial issue for which many scientific questions remain. Several aspects related to human and environmental health are presented, providing the background information necessary for informed debate. The Conclusions and Recommendations drafted by the Presidents of the three Unions review the policy issues and how they relate to the science.

This publication is the result of continuous efforts to address issues of societal and industrial concern objectively, involving the chemical sciences. A similar report on chlorine was published in September 1996.

For further information, contact:
IUPAC Secretariat
P O Box 13757, Research Triangle Park, NC 27709-3757, USA
Phone: (+1-919)-4858700, Fax: (+1-919)-4858706
Email: secretariat@iupac.org
Website: http://www.iupac.org/publications/pac/special/0998

ANZCCART STUDENT AWARD

The Board of ANZCCART Australia is again offering its ANZCCART Student Award, in conjunction with the 1999 Conference in Dubbo on 26 and 27 May 1999, whose theme is "The Use of Wildlife for Research".

The purpose is to encourage attendance and involvement at the Conference by honours and postgraduate students.

The objectives of ANZCCART are:

- To promote excellence in the care of animals used in research and teaching and thereby minimise any discomfort that they may experience.
- To ensure that the outcomes of the scientific uses of animals are worthwhile.
- To foster informed and responsible discussion and debate within the scientific and wider community regarding the scientific uses of animals.

The award is open to all disciplines and is worth $1000 inclusive of travel costs. Students are required to submit an abstract on an animal welfare theme relevant to the conference and be prepared to give a 10 minute talk at the conference.

Applications should be submitted by 27 April 1999 to:
Dr Robert Baker, ANZCCART
P O Box 19, GLEN OSMOND, SA 5064, Australia
Phone:(+61-8)-83037393, Fax: (+61-8)-83037113
Email: anzccart@waite.adelaide.edu.au

SMUGGLERS THREATEN MONTREAL PROTOCOL

As international delegations gathered in Cairo last month for the latest review meeting on the Montreal Protocol, they were given a stark warning that the whole treaty could 'unravel' if government enforcement agencies do not clamp down on smugglers of CFCs and halons.

Undercover work by the Environmental Investigation Agency (EIA), a lobbying organisation, shows that China has replaced Russia as the main source of ozone-depleting substances on the black market. Chinese traders are offering to supply customers in the US and EU with the bromofluorocarbon fire suppressant halon 1301 in quantities far in excess of China's official production capacity - and they are brazenly offering to falsify the paperwork to fool customs officials.

Posing as a chemical dealer, EIA's Julian Newman secretly filmed meetings he had with various traders in China's Zhejiang Province. EIA's 'front' company, Bursco, was offered well over 1500 tonnes of 'recycled' halon 1301 a year and unlimited quantities of chlorofluorocarbon 12 (CFC 12). Production at China's only licensed halon 1301 plant is around 700 tonnes pa and its recycling capacity is much lower (the most advanced halon recycling plant in the UK can handle about 75 tonnes pa). EIA has evidence for at least two unlicensed halon plants operating in China. A kilo of legitimately recycled CFC12 sells at about £12 in Europe, but Bursco was offered lots of 50-60 tonnes at £1 a kilo.

Virtually all production and import of virgin CFCs and halons is banned in the West under the Montreal Protocol, but under Article 5 of the protocols some developing countries like China, India, Mexico and Russia do not have to freeze production until next year and can continue to make the products at 1999 levels for domestic use until 2010. The Chinese Embassy in London told EIA that 'China is yet to ratify the Montreal Protocol Amendment ... which requests contracting parties to introduce import and export license controls. Therefore China is under no obligation ... it is the illegal business men in EU countries and the insufficient control system in EU countries to be blamed for the illegal trade'.

EIA warns that CFC and halons are being smuggled into most EU countries, despite zero import quotas, with Rotterdam and Barcelona the favourite ports of entry. It says that the trade is stifling legitimate recycling operations and the introduction of

replacement compounds. The situation will get worse when hydrochlorofluorocarbons (HCFCs) are withdrawn, EIA warns.

EIA wants to see proper enforcement of import controls by national governments, perhaps with a task force to help the agencies coordinate their work. It also wants to see the current draft EU Regulation, which will finally end CFC and halon trade, enter into force 'without being watered down'.

Illegal CFC and halon use has put the recovery of the ozone layer back by 20 years already, warns EIA's Steve Trent, 'If this trade is not stopped then recovery will be further delayed.'

ROHM & HAAS MERGES WITH MORTON

Rohm & Haas (R & H) has agreed a merger with Morton International to create a 'leading speciality chemical company with major growth opportunities'. The merger is in the form of a friendly takeover, with R & H buying two-thirds of Morton's shares and then exchanging the rest for shares in the merged company. The deal values Morton at US$4900 m and creates a group with an annual turnover of US$6500 m which will be the largest pure specialty chemical company in the US.

Merging the two companies' operations will create a speciality adhesive business with sales of US$500 m pa, and an electronic material business with US$1000 m turnover and high growth rates. Some Morton products will complement R & H's ranges of plastic additives and biocides, and will allow R & H to enter the growing market for powder coatings. Morton's US$790 m pa salt business, which has provided a cash driver for the company, will be a significant part of the group, as will R & H's performance polymer businesses.

The combined group will have 23,000 employees worldwide. R & H has a track record in cost-cutting and says that it expects to make savings of US$200 m a year from the merger, mainly through economies of scale in raw material purchases and transport, elimination of duplicate corporate and administrative functions, and efficiencies in operations and businesses. R & H pledged to minimise the effects on the workforce 'through a combination of reduced hiring, attrition and other appropriate measures'. Three Morton executives will join the R & H board, including Jay Stewart, Morton's chairman and chief executive, who will become a vice-chairman alongside Rajiv Gupta, who is slated to take over as R & H chairman and CEO from Lawrence Wilson at the end of this year. Michael Fitzpatrick of R & H will continue as president and chief operating officer of the merged group.

PITTCON EDITORS' AWARDS '99

Mass spectrometry companies dominated the Pittcon Editors' Awards this year, according to Dr Brenda Wilkinson of *Analytical Instrument Industry Report* and Dr Bob Stevenson of *American Laboratory* who organised the informal poll of editors and journalists covering this major industry event for analytical instruments and laboratory equipment.

Selected as 'Best New Product' at the show from 30 nominations, the Gold Award went to the Elan 6100 DRC ICP-MS from Perkin-Elmer SCIEX, a Canadian product that uses patent-pending Dynamic Reaction Cell technology to eliminate the most difficult interferences encountered in ICP-MS. PE SCIEX, with over 1,000 Elan ICP-MS systems installed, claims to hold, "the number one position as market leader in ICP-MS".

Winner of the Silver Award was the Kodiak 1200 quadrupole mass spectrometer. Designed and manufactured by a relatively recent US start-up, Bear Instruments Inc, this neat, benchtop MS-MS system has an innovative interface design which allows easy switching between GC-MS and LC-MS.

The Bronze Award went to ThermoQuest for a product from its pioneering mass spectrometry business, Finnigan, the LCQ Deca, an ion trap spectrometer that is capable of MS^{10} and claims an order of magnitude increase in sensitivity over existing technologies.

Narrowly missing an award, but ranked highly by the 17 editors involved in the voting process were, with equal votes: the compact INCA NMR system from Bruker; the LCT with MUX technology from Waters' mass spectrometry subsidiary, Micromass; the Nexus FTIR on show at ThermoQuest's Nicolet booth; and the capillary-scale HPLC designed for MS applications, CapLC, from Waters.

Other companies, whose products were selected by these editors and others who provided their nominations prior to the voting, were, in alphabetical order: Applied Automation (FT-ICRMS); Chromacol (Webseal); Formulaction (Turbiscan online light scattering detector); Hewlett-Packard (HP 6850 GC); ISA/ Horiba (JY 1000 RF glow discharge spectrometer); J&M (TIDAS II diode array spectrometer); K&M Electronics (compact HV power supply); Labsystems (Nautilus LIMS); Leeman (CCD View); Milestone (Hg analyser); MISCO (digital fiber-optic probe refractometer); Omnimark (Mark 2 microwave moisture analyser); Perkin-Elmer (Q-Star LC-MS-MS); Sentex (portable purge & trap GC); SGE (multi-syringe microinjector); Stonybrook (disposable viscometer); Synoptics (Montage Explorer); TA Instruments (μ-TA with GC-MS interface); Virtek (ChipReader); and WTW (Inolab).

EG&G TO BUY PERKIN ELMER'S INSTRUMENT BUSINESS FOR US$425 MILLION

EG&G, Inc (Wellesley, MA) announced on 8th March that it plans to acquire the analytical instruments division of Perkin-Elmer Corp (Norwalk, CT) for US$425 million before the end of the second quarter, subject to regulatory approval and normal closing conditions. The consideration to be received by Perkin-Elmer will include US$275 million in cash and US$150 million in EG&G debt, bearing a 5% coupon and having a one-year maturity.

Perkin-Elmer announced its decision to divest the business last year to concentrate on the life sciences market. The company will now change its name to PE Corp and transfer the 'Perkin-Elmer' brand name to EG&G.

The agreement will not include PE Nelson, which will be retained as part of PE Biosystems. The mass spectrometry joint venture with Sciex, however, will transfer to EG&G ownership.

The transaction is the latest in a series of moves intended to drive EG&G's growth into commercial markets. EG&G recently bought Lumen and Life Science Resources "which added critical mass and technologies in the optoelectronics and life sciences

markets". It is now exploring, "strategic alternatives" for its US$450 million technical services unit.

President and CEO Greg Summe stated, "this is truly a strategic acquisition for us - one that will allow us to build scale in our existing instruments and life science units and to better position our company for continued growth. Perkin-Elmer has a strong global distribution network, a widely recognised and respected brand name, excellent people, and is a leader in innovation with some exciting products in the pipeline".

EG&G expects that this acquisition, its largest ever, will add some 3,100 employees and around US$570 million in sales (adjusting for PE Nelson).

Perkin-Elmer's chairman Tony White concluded, "we set out three years ago to transform the company into the pre-eminent supplier of genetic products, services and information to emerging life sciences markets such as molecular medicine, agriculture, and forensics ... the sale of Analytical Instruments marks a significant milestone in that transformation". He noted, "we expect to be working with EG&G for up to three years to ensure a smooth transition".

EG&G has annual sales of approximately US$1.4 billion and more than 13,000 employees worldwide. During 1998, it consolidated its business into five independent units of which EG&G Life Sciences account for 1998 sales of US$148 million and EG&G Instruments US$247 million.

HP TO SPLIT INTO MEASUREMENT AND COMPUTING BUSINESSES

Hewlett-Packard Co (Palo Alto, CA) said on 2nd March that it would create two, "financially strong and independently managed companies ... one focused on the measurement businesses, the other on the computing and imaging businesses".

HP will transform the computer business into an e-services and information appliances company and create an opportunity of, "reinventing the measurement business" on which the company was founded by Bill Hewlett and Dave Packard in 1938.

CEO Lew Platt says that, "HP's size and diversity has made it difficult to manage". This change, "will allow us to be more aggressive in pursuing business opportunities and positions each new company to deliver enhanced growth in revenue and earnings". Restructuring is expected to take 12 to 18 months.

The new measurement company, to be run by CEO Ned Barnholt, will comprise HP's test and measurement, components, chemical analysis and medical units. The 45,000 strong Fortune 200 business, which is as yet unnamed, accounted for US$7.6 billion of HP's total fiscal 1998 revenues of US$47.1 billion.

With its US$1 billion chemical analysis group, HP believes it is the market leader in GC and HPLC. Barnholt stated that, "this is a once-in-a-lifetime opportunity. We now have an US$8 billion a year startup ... this puts measurement back in the front spotlight".

Asked what the 3,800 strong chemical analysis group would gain from the restructuring, general manager Rick Kniss said "the change will allow us to sharpen our strategic focus, increase our speed and agility, pursue new business opportunities and build value for our shareholders".

HARVARD ACQUIRES BIOCHROM FROM PHARMACIA AND UPJOHN

Harvard Apparatus Inc, (HAI), (Holliston, MA) has acquired Pharmacia Biotech (Biochrom) Ltd (Cambridge, England) from Pharmacia and Upjohn, Inc (Kalamazoo, MI) and signed a partnership agreement with Amersham Pharmacia Biotech, "for the continued distribution of Biochrom products as well as future products developed or acquired by HAI". HAI makes syringe pumps, ventilators and cell injectors, and distributes products for toxicology, metabolism and efficacy testing of new drugs.

According to HAI's CEO Chane Graziano, "the acquisition gives HAI a strong market position for dedicated spectrophotometers in the molecular biology market and an excellent technology base on which to build future products". APB said recently that, in addition to its Biochrom model 20 amino acid analyser, it had installed over 14,000 UV/visible units, including the popular Ultrospec range.

The United Kingdom business will now trade as Biochrom Ltd and operate as a freestanding subsidiary of HAI under the leadership of managing director Barry Brown.

Characterisation of Polymeric Materials

Neil Edmonds, Director, Polymers & Coatings Science, Department of Chemistry, The University of Auckland, Private Bag 92019, Auckland

The University of Auckland has introduced a postgraduate programme in polymers and coatings science. The programme started in 1999 with 17 students studying for the postgraduate Diploma in Science and 7 for the Master of Science qualification. In total, over 40 students are involved in polymer research at postgraduate level. Approximately half are employed in the chemical industry and studying part-time, while an increasing number of the full-time students are involved with industry- funded research programmes, a trend that is expected to rapidly grow in future years.

Characterisation of polymers is obviously a key element of the research programme. Some of the core techniques are examined below, along with examples of typical applications. Discussion of underlying theory must by editorial necessity be limited to absolute essentials – those interested in greater detail are invited to contact the writer for additional information.

As chemists, we are all familiar with a range of analytical techniques that allow us to probe the chemical structure of materials. For polymer chemists, the most familiar is probably infrared spectroscopy. Less familiar but equally important are instruments that provide detail on the mechanical and physical properties of substances - together the two classes of instrumentation provide a complete picture of material properties.

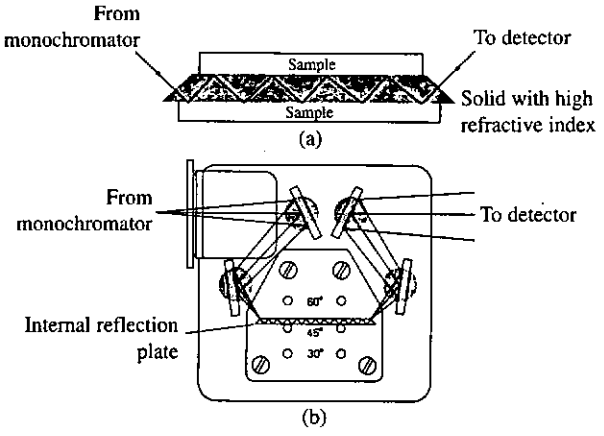
Traditionally, chemists have not had a great affinity for the latter category, but the development of materials science in New Zealand over the last decade has brought about a renaissance in thinking. The boundary between chemical and physical/ mechanical properties is blurred, and increasingly we are concerned with relating mechanical properties to chemical structure. Simultaneously, the advent of sophisticated control devices such as Peltier heating/cooling systems has allowed for highly accurate measurements to be taken on very small samples.

Excluding NMR, gel permeation chromatography (GPC), or surface techniques such as x-ray photoelectron spectroscopy (XPS - which provides vital information on chemical composition), the main instruments used on a regular basis at the University of Auckland to investigate polymeric materials are infrared spectroscopy (IR), thermal analysis (TA) and rheometry. While we are all familiar with the theory relating to infrared spectroscopy, we are less *au fait* with thermal analysis and rheometry. These are examined below, along with brief coverage of IR reflectance techniques that have specific applications to polymer science.

Infrared Spectroscopy

Just as the quantifying of colour using reflected visible light has revolutionised colour measurement, the advent of reflectance IR techniques has enhanced the use of IR as a tool for investigating the surfaces of materials such as laminated films and opaque coatings. The basic system is specular reflectance, a technique where infrared radiation is reflected from a surface after a single 'bounce', the transmitted beam having lost energy characteristic to the sample.

Multiple Internal Reflectance (MIR) typically provides greater resolution. This is a standard reflectance sampling technique where the sample is clamped to the face of a transparent crystal of high refractive index, such as zinc selenide. Precise optical alignment means that the IR beam penetrates a short distance into the sample before being reflected, multiple reflections resulting in energy absorptions in the surface layer at characteristic wavelengths. A significant advantage of MIR is that aqueous solutions can be analysed using the appropriate sampling system. Note that MIR has largely replaced Attenuated Total Reflectance (ATR).



Internal reflectance apparatus. (a) Sample mounted on reflection plate; (b) internal reflection adapter.

Simultaneous to the development of reflectance techniques, the advent of IR spectral libraries has eased the task of spectral interpretation, although the bottom line still rests with operator interpretation. This article would not be complete without at least mentioning near-infrared spectroscopy (NIR), which is increasingly used in reflectance mode for on-line process control.

Thermal Analysis

A thermal analyser examines the change in the physical property of a material (mass, modulus, phase etc.) with changing temperature or time. A feature of thermal techniques is the small sample requirement, typically 20 mg for DSC and STA. The University of Auckland has three thermal analysers:

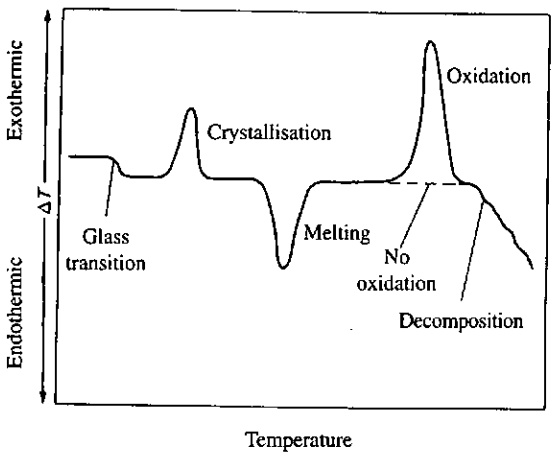
Differential Scanning Calorimeter

DSC measures the heat absorbed or emitted by a sample over a temperature range of approximately –160 °C to 770 °C, providing highly accurate information on properties such as heat of fusion, phase changes and reaction kinetics (for thermosetting

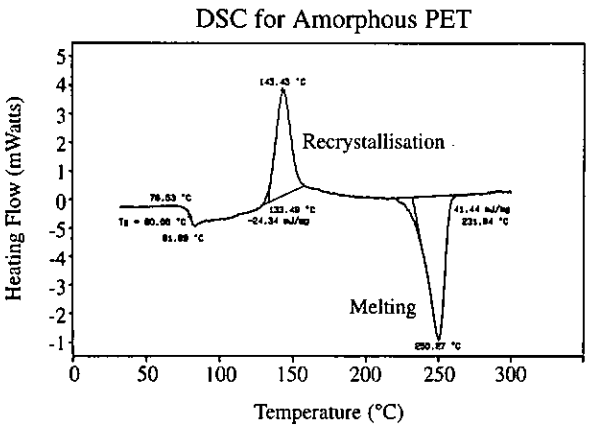
polymers). DSC is frequently used to check on purity, determine melting points, assay blends and determine oxidative stability.

Simultaneous Thermogravimetric/Differential Thermal Analyser

The STA is located in the Geology Department, and simultaneously provides data on both mass and phase change with varying temperature, the latter information being similar to that obtained by DSC. The STA will operate from ambient up to 1500 °C.



Schematic differential thermogram showing types of changes encountered with polymeric materials.

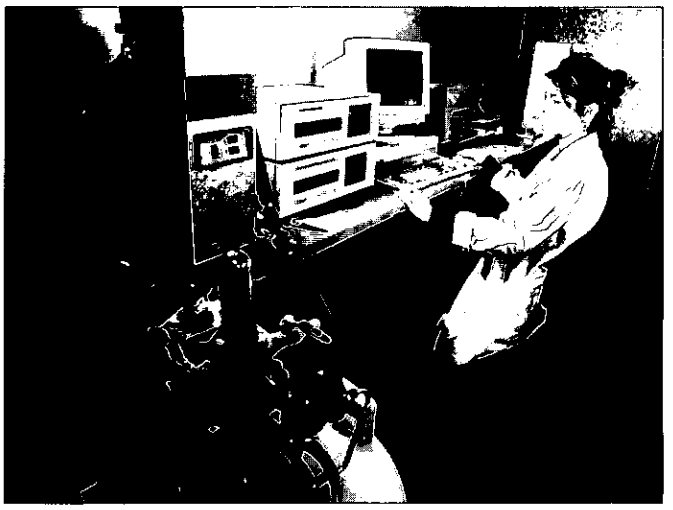


Dynamic Mechanical Thermal Analyser

DMTA is the most complex of the standard thermal analysis techniques. For those who have struggled to grasp the subtleties of stress-strain curves, DMTA requires a greater understanding of mechanical behaviour.

Consider a sample mounted in a miniature tensile tester inside an environmental chamber, which has a temperature range of –120 °C to 400 °C. The test may require isothermal operation or ramping over a set temperature range, the sample being tested at intervals as conditions change. The key point is that the sample is not destroyed during the test, hence we measure the tensile modulus rather than the tensile strength at each point in the temperature range. Instead of operating in tensile mode, compressive, shear and flexural testing may be performed, but the same principle applies – the sample remains intact after testing.

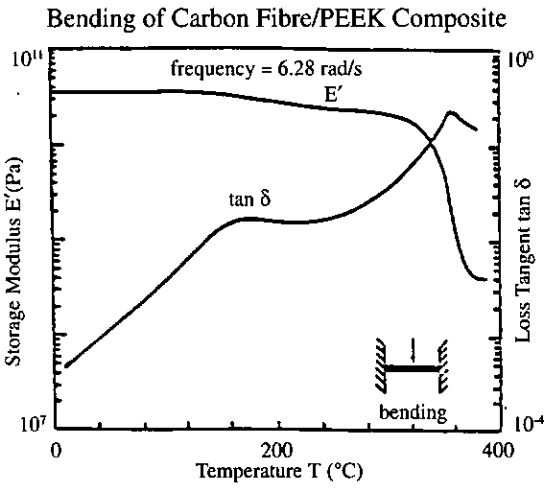
Other variables such as the frequency at which the sample is stressed and the amplitude of the load applied must be carefully chosen to provide the information required. Like temperature conditions, these may also be fixed or varied, hence an extensive range of test conditions is possible.



Above: The DMTA in operation at the University of Auckland.

Now consider what happens when stress is applied to a solid, and then the load is removed. Many polymers are viscoelastic, meaning that they do not return to their original shape and are said to exhibit viscoelastic behaviour (this is the cause of creep). DMTA is a very powerful technique for determining viscoelastic behaviour. As mentioned above, an oscillatory stress is applied to the sample; if the material behaves as perfect elastic then the sample fully recovers. If the material is viscoelastic however, the sample will not completely recover. This behaviour results in the derivation of two terms – storage modulus (G′) and loss modulus (G″), plus a further parameter known as the phase lag tan δ, defined as G″/G′.

DMTA is also a very sensitive method for determining glass transition temperatures - the temperature at which polymers become brittle on cooling. The technique is also used to examine ageing effects on mechanical properties, determine the effect of fillers and measure curing processes. The following diagram illustrates the bending of a carbon fibre/PEEK composite. Note that the modulus remains high up to the crystalline melting point of 360 °C; the glass transition (T_g) of the polymer is indicated by the broad peak in tan δ at 160 °C.



Rheometry

The Chemistry Department at the University of Auckland has recently purchased a Paar Physica UDS200 Rheometer. In its most basic mode, a rheometer examines the change in properties of a liquid with varying shear rate – it is essentially a very sophisticated viscometer. Conventional viscometers provide 'single point' readings of viscosity at a given shear rate; rheometers provide the same data over a continuous range of shear rates.

Used under conditions of changing temperature, a rheometer is also a 'thermal analyser' – the only difference is that the samples are liquid rather than solid. The theory relating to DMTA also applies to the rheometer. When dealing with liquid samples however, applied stress is immediately dissipated as flow. For gels and some elastomeric materials, the rheometer can test samples under the same conditions as described above for the DMTA. Instead of rotating however, the rheometer spindle oscillates over a preset frequency/amplitude range, both of which can be varied as with DMTA.

Rheology deals with the flow and deformation of substances and in particular with their behavior in the transient region between solids and fluids. Fundamentally, tests can be conducted under two sets of conditions:

Controlled Shear Rate (CSR) – also known as a rotational test, the sample is sheared at a preset rate, giving a result of shear stress, from which viscosity can be calculated. This mode is used where it is required to simulate process conditions such as coating application.

Controlled Shear Stress (CSS) – the reverse of CSR. A preset shear stress is applied to the sample and the shear rate is recorded, from which viscosity can be calculated. This mode simulates natural processes where flow results from an acting force (e.g. blood circulation).

Consider the following example, appropriate to the timing of this issue of *Chemistry in New Zealand*. Without rheology, many an Easter bunny would be an Easter egg. Easter bunnies are made in a hollow mould by casting and subsequent spinning. For this technique it is important that at a given processing temperature the flow behavior is precisely adjusted. Only when the flow behavior is one hundred percent correct is the chocolate evenly distributed in the mould and a smooth surface is produced. Only then can the Easter bunny show itself at its best.

But our primary interest is with polymeric materials, especially when they are processed into plastics, synthetic resins, coatings, adhesives, or inks. We need to determine the rheological properties of pure polymers and commercial products based on a polymeric binder. The following examples illustrate the range of applications for rheometers:

If the melt viscosity of plastics differs too greatly, they will not mix in the melt phase. Such materials can be tested under the temperature/shear conditions present in extruder barrels.

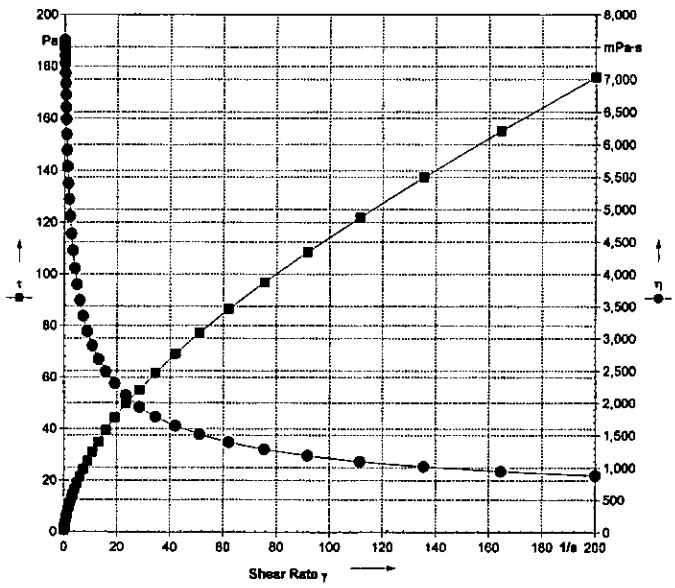
Products such as coatings and plasters must not sag when applied to vertical surfaces. The rheometer can accurately measure yield-point recovery following coating application.

Rheological measurements are one of the best ways to characterise the polymerisation kinetics of thermosetting resins. They provide a reproducible means for determining the gel time, and to follow cure after the gel point to solidification. Measurements can be performed isothermally or using a specific temperature profile.

Many coatings are dispersions that must be formulated to last on the shelf for months or years. One of the most common storage problems is sedimentation. At very low shear rates, rheometers can simulate the process whereby particles settle in a fluid under gravity. The optimum formulation required to minimise settling can hence be found.

The attached flowcurve for a gel illustrates typical results.

Flowcurve



Wet suit-sample 1
MK 22 (50 mm, 1 °)
τ Shear Stress
η Viscosity

So, the arsenal of test methods and techniques has expanded. Like all instrumental techniques however, it is not enough to know which button to press. The equipment described above can be used in many different modes; it is knowing how to get the information you require and how to interpret the results that limit the potential value of such technology. The bottom line is the old adage - it is not what you have got, it is how you use it.

Patent Proze

by Jane Calvert and Greg Lynch

SWISS-STYLE CLAIMS – UPDATE

In earlier issues of Patent Proze *(Chemistry in New Zealand* **61**, 1 (January 1997) and **61**, 4 (July 1997)) you may recall that we discussed a change in New Zealand patent practice in relation to the protection of pharmaceutical inventions using "Swiss-style" patent claims.

Swiss-style claims are intended to protect a new therapeutic use for a known pharmaceutical. Such claims are particularly relevant in countries like New Zealand where the law bars patent monopolies on methods of therapeutically treating humans. In those countries, Swiss-style claims may be the only form of protection possible where a new therapeutic use has been found for a known pharmaceutical.

Early in 1997 the Commissioner of Patents decided to bring New Zealand patent practice in line with international trends and allow Swiss-style claims. Pharmac (the Pharmaceutical Management Agency Limited) then sought judicial review of that decision in the High Court. Following a week long hearing in November last year, the High Court decided to uphold the ruling of the Commissioner of Patents that Swiss-style claims are valid claims in New Zealand. The judgement given by Justice Gallen was thorough and well reasoned. However, that is not the end of the matter.

Pharmac has now appealed the High Court decision to the Court of Appeal. At the same time, Pharmac applied to the High Court to prevent the Commissioner accepting patent applications containing Swiss-style claims in the interim period, pending the outcome of the Appeal. The High Court granted a partial stay, allowing the Commissioner to examine and accept each application and publish it for opposition purposes, but not to actually grant the patent. (We refer to the Patent Proze in *Chemistry in New Zealand* **61**, 2 (March 1997) which outlines the procedure for obtaining a New Zealand patent.)

In accordance with the partial stay granted by the High Court, the Intellectual Property Office of New Zealand (IPONZ) is to begin accepting pharmaceutical patent applications containing Swiss-style claims. All such applications that were pending at IPONZ are being processed and will proceed to acceptance in the near future. No applications will be held in abeyance pending the outcome of the Court of Appeal hearing.

There are likely to be more than 300 current patent applications directly affected by this change of practice that will proceed to acceptance in the near future. There are some concerns about such applications being accepted prior to the ruling of the Court of Appeal. It seems to us that to accept these applications at this stage is to jump the gun. Also of concern is that once a patent application has been accepted it is very difficult to make amendments to the application, possibly leaving the applicant with few remaining options to adequately protect their invention.

We are optimistic that the Court of Appeal will uphold the High Court's decision on the validity of Swiss-style claims. However, given the uncertainty in any litigation one cannot rule out a reversal.

It has been some time since a substantive patent issue has been heard by the Court of Appeal and so this case will be watched closely with interest. A date has not yet been set down for the hearing, although it is likely to occur before the year is out.

We will inform you of the outcome of the court proceedings in due course and any further significant changes in practice adopted by IPONZ.

A reminder: if you have any queries regarding patents, or indeed any form of intellectual property, please direct them to:

Patent Proze, Baldwin Shelston Waters
PO Box 852, Wellington
Email email@bswip.co.nz, Internet: www.bswip.co.nz

Jane Calvert

Jane Calvert and Greg Lynch are both employed in the patent department of Baldwin Shelston Waters, Patent and Trademark Attorneys and Solicitors, where they specialise in chemistry patents. Jane joined the firm after completing a PhD in chemistry at the University of Canterbury in 1994. Greg also joined the firm in 1994 after three years research at Industrial Research Limited 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 in the United Kingdom.

Greg Lynch

IR, FTIR, Thermal Analysis, Viscosity Feature

NEW CONE PLATE VISCOMETERS FROM BROOKFIELD

Brookfield Engineering Laboratories, the manufacturer of the world leading Brookfield Viscometer have introduced the Cone Plate Digital Viscometers for providing a high shear rate test for paints and coatings. The Cone Plate Viscometer will simulate material behaviour in rolling, brushing and spraying applications. The CAP viscometer may be used in QC or R&D applications that require quick, easy testing of materials at high shear rate

The CAP Viscometers are available in two versions:
The CAP1000 which has a single speed of 750 rpm and a shear rate of 10,000 or 25,000 sec^{-1} with a viscosity measurement range of .25 to 100 Poise.

The CAP2000 which has a variable speed of 50 to 2,000 rpm, a shear rate of 166 to 26,600 sec^{-1} and a viscosity range of 0.1 to 1500 Poise. When utilising the Brookfield CAPCALC software the CAP2000 may be operated under PC control and the software is also used for analysis.

Contact: Alan Russel, Biolab Scientific Ltd
Freephone: 0800 933966
Email: alanr@biolab.co.nz
Website: www.biolab.co.nz
circle number 21 on the reader reply card

ELEGANTLY SIMPLE VISCOMETERS FROM COLE-PARMER

Viscosity can be measured in various different ways, and this is reflected in the diverse range of instruments now available to assess the fluid properties of adhesives, paints, lubricating oils, varnishes, pastes, gels and syrups. The simplest methods are often the best and most cost effective for routine quality control and research applications.

Falling Ball Viscometer
The Falling Ball Viscometer is simple and easy to use. A glass tube is filled with the fluid sample and the ball is allowed to enter a holding screw. The tube is then returned to the upright position, a knob is turned to release the ball and the time of descent is measured.

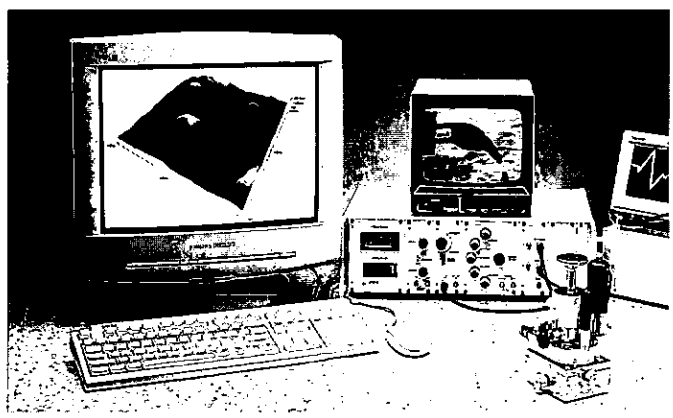
Gilmont Falling Ball Viscometers from Cole-Parmer are supplied with one glass and one stainless steel high-precision ball. For high viscosity fluids, a tantalum ball is also available. Manufactured from precision-bored glass tubing and corrosion-resistant plastic with Teflon screw and Viton O-ring, these Falling Ball Viscometers conform to ASTM standards.

Glass Capillary Viscometer
The Glass Capillary Viscometer is also an elegantly simple way to determine viscosity using ASTM testing methods. Capillary viscometers are used with Newtonian fluids (those whose viscosity remains constant with a change in shear rate such as water and solvents), and for kinematic viscosity determinations where there is a constant ratio between absolute viscosity and density of the fluid.

Cole-Parmer offer a range of Cannon glass capillary viscometers; including Ubbelohde viscometers for assessing kinematic viscosities of transparent Newtonian liquids, and Cannon-Fenske Routine viscometers for transparent Newtonian liquids in the chemical and petroleum industries, being especially well suited to high temperature measurements. There are other variants which provide for determinations of opaque and dark fluids, hydraulic lubricants and oils. A range of accessories such as constant-temperature water baths are also available.

Contact: Neil Bryant, Biolab Scientific Ltd
Freephone: 0800 933966
Email: neilb@biolab.co.nz
Website: www.biolab.co.nz
circle number 22 on the reader reply card

THERMOMICROSCOPES INTRODUCES THE EXPLORER POLYMERSYSTEM SCANNING PROBE MICROSCOPE WITH INTEGRATED MICRO THERMAL ANALYSIS AND PULSED FORCE MODE IMAGING



ThermoMicroscopes announced today the introduction of its new Explorer PolymerSystem™ (PS), a scanning probe microscope (SPM) designed specifically for polymer industrial and research laboratories. The new Explorer PS adds thermal and mechanical analysis to the imaging and analytical arsenal of scanning probe microscopy, providing, in a single integrated system, a comprehensive micro-characterisation solution for the polymer community.

The Explorer PS addresses the fact that most advanced polymers are heterogeneous blends in which the performance of the bulk material depends largely upon the properties of microscopically

distributed component phases and their interactions. Traditional thermal and mechanical analytical methods lack sufficient spatial resolution and sensitivity to characterise these microscopic domains. The new Explorer PS combines the inherent resolution of scanning probe microscopy with the power of Micro Thermal Analysis (μTA™) and Pulsed Force Mode (PFM) imaging to create a single system capable of imaging and analysing a material's physical, mechanical, and thermal properties with submicron spatial resolution.

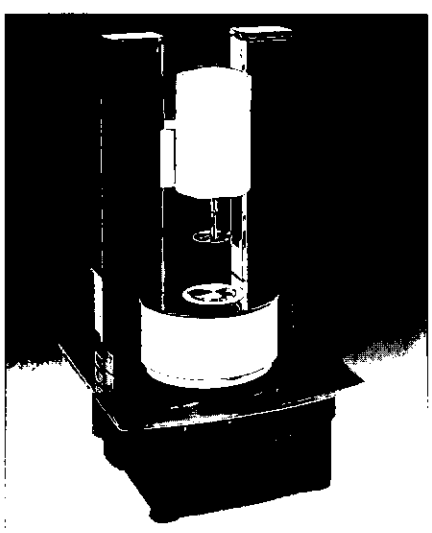
Micro Thermal Analysis, winner of the 1998 Pittcon Editors' Gold Award for Best New Product, can measure and map thermal conductivity, thermal diffusivity, phase transition temperatures, and thermal expansion rates for sample volumes less than a micron in diameter. In addition to providing high spatial resolution, the small analysis volume also permits high heating rates (up to several degrees per second) for dramatic improvements in analytical speed and productivity.

Pulsed Force Mode imaging, an intermittent contact imaging mode, can simultaneously acquire separate topography, stiffness, and adhesion images, permitting efficient, independent evaluation of topographic, mechanical, and chemical properties — all from a single rapid scan.

The Explorer PS, while adding μTA and PFM, retains all the imaging modes of the popular Explorer SPM series, offering, among other capabilities, atomic force, lateral force, modulated force, magnetic force, electrical force, and scanning tunnelling microscopies. By combining all of these in a single integrated system, the Explorer PS provides a comprehensive microcharacterisation solution with unequalled capability, speed, and convenience.

Contact: ThermoMicroscopes
1171 Borregas Avenue, Sunnyvale, California 94089, USA
Phone: (+1-408) 7471600, Fax: (+1-408) 7471601
Website: http://www.thermomicro.com
circle number 23 on the reader reply card

RHEOWAVE 1 - QUALITY CONTROL RHEOMETER FROM HAAKE



Comprehensive quality control of viscoelastic fluids calls for research grade rheometers which represent a significant investment in capital and expensive labour for highly qualified operators.

With RheoWave 1, advanced QC of viscoelastic materials is now affordable without compromising accuracy and performance specifications.

RheoWave 1 is a dynamic rheometer with a completely new approach. It offers:

- a high degree of accuracy
- good value for money
- easy operation
- fast results

RheoWave Applications

Fluids:
If your application requires the characterisation of the rheological behaviour of thin viscoelastic fluids such as polymer solutions, stabilisers, detergents, thickeners like CMC or Guar gum, ink jet inks, weak suspensions, emulsions or even foams then the RW1-Fluids is the ideal choice to measure the material spectra in the range from 0.0001 to 32 Hz with oscillation or to determine the zero shear viscosity with creep testing.

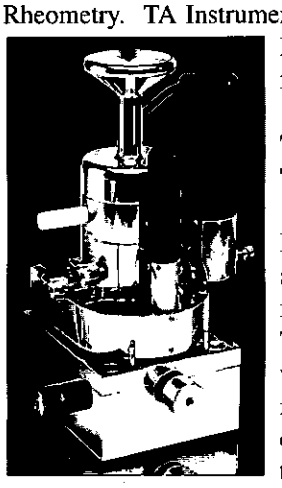
Melts:
For medium to high viscosity materials which require dynamic testing due to their viscoelastic nature, the RW1-Melts is the perfect choice for comprehensive quality control.

Materials like filled pastes e.g. printing inks, soldering pastes, metal pastes or sealing putties can be easily tested using dynamic oscillation to get both viscosity and elasticity values or creep testing can be used to check for practical yield points or low shear viscosity. Measurements at elevated temperatures (100 °C to 350 °C) allow the user to determine G′, G″ over a wide range of frequencies of resins and polymer melts. The test mode multiwave is the ideal method to get the material spectra (G′, G″ = f (ω)) during chemical reactions, curing or when temperature is changed for gelation or polymerisation.

Contact: GBC Scientific (NZ)
P O Box 68-330, Newton, Auckland
Phone: (09) 3600928, Fax: (09) 3600683
Email: gbcaec@xtra.co.nz
circle number 24 on the reader reply card

TA INSTRUMENTS DSC, TGA, μ-TA, RHEOMETRY

Alphatech Systems is proud to represent the TA Instruments range of analysers which includes DSC, TGA, μ-TA and Rheometry. TA Instruments is a respected name and market leader in these fields offering the following:



TA Instruments μTA 2990 Micro Thermal Analyser

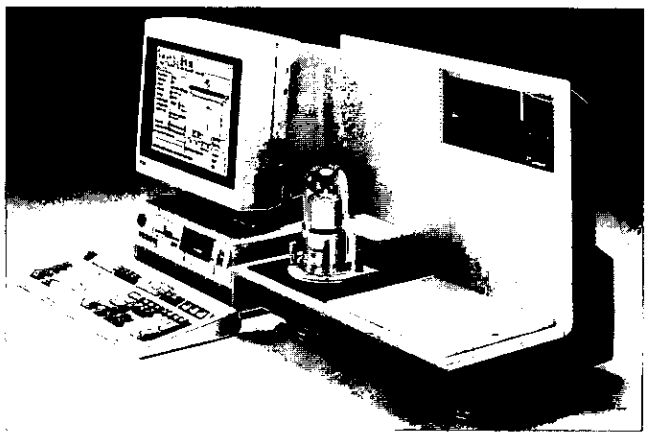
Micro-Thermal Analysis (μTA™) is an exciting new innovation in the field of materials characterisation. This invention combines the visualisation power of atomic force microscopy (AFM) with the characterisation capabilities of thermal analysis.

In Micro-Thermal Analysis, the AFM head is fitted with an ultra-miniature temperature probe which not only provides the heat source, but also measures the thermal response providing information similar to traditional thermal analysis, but on a microscopic scale. Patented modulated temperature technology is used to enhance the signal in a similar way to Modulated DSC, and to provide depth profiling by varying the frequency over a wide range. This new technology has wide ranging applications including the characterisation of phases, grains, and interface surfaces of polymers, pharmaceuticals, and foods.

Micro-Thermal Analysis can be used to characterise materials and surfaces, visualising the spatial distribution of phases, components, and contaminants. The instrument images the structure of a 100 μm x 100 μm region of the sample in terms of its topography, thermal conductivity, and thermal diffusivity. With a resolution of less than 1 μm, any point (2 μm x 2 μm) on the image can be selected for characterisation of its calorimetric and mechanical properties.

Because of the small amount of sample actually affected for each measurement, heating and cooling rates are very high, providing the ability to make numerous measurements in a few minutes. Micro-Thermal Analysis is an important new addition to TA Instruments' wide range of thermal analysis and rheology products.

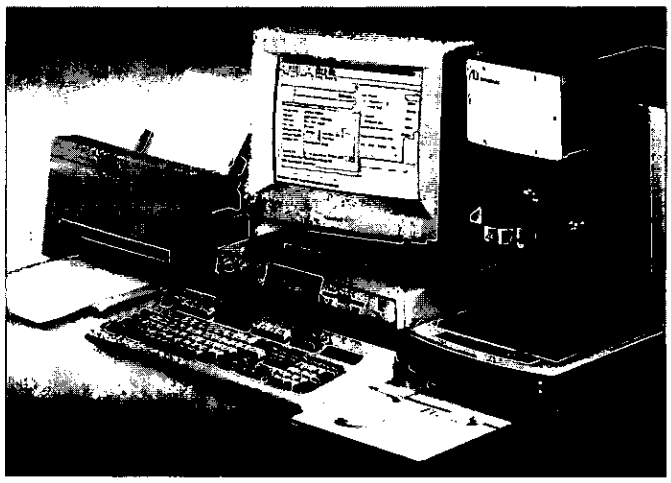
TA Instruments DSC 2920 Differential Scanning Calorimeter



The DSC 2920 is the product of more than 30 years of leadership in calorimetry. The instrument combines the features and benefits of a proven heat flux design with new cell mounting technology and enhanced electronics to provide a DSC that is more sensitive, more versatile, and easier to use than any of its predecessors. The 2920 is designed to operate a standard DSC cell, a dual sample DSC cell, a pressure DSC cell, and a high temperature 1600 °C DTA cell. These cells are mounted on the DSC 2920 base via a unique interconnect design which optimises cell performance. In fact, the DSC 2920 offers the highest sensitivity (0.2 μW), temperature reproducibility (±0.05 °C), calorimetric reproducibility (±0.1%), and widest temperature range (-180 °C to 725 °C) of any commercially available general purpose DSC. In addition, the 2920 interconnect design allows rapid interchange of cells and "smart module" software further simplifies the interchange process. When a different cell is connected, the 2920 recognises the cell type and automatically restores calibration parameters.

Compatibility with accessories for differential photo-calorimetry and modulated DSC, as well as a 62-sample autosampler, further broaden the versatility of the DSC 2920 making it the most complete research grade DSC available.

TA Instruments TGA 2050



The TA Instruments TGA 2050 is based on a unique vertical balance/horizontal purge design and provides a series of features which make it ideal for laboratories that want a high quality TGA, but that have a limited budget. These include:

Excellent TGA Performance
The unit's high sensitivity (0.2 μg), high capacity (1 g), and broad temperature range (ambient to 1000 °C) are equivalent to specifications normally associated with expensive research-grade instruments. The TGA 2050 has many automated features such as automated sample pan loading which make it ideal for less experienced operators. Furthermore, its design makes for easy interfacing to evolved gas analysis techniques (e.g. mass spectroscopy or FTIR).

Compact Design
Makes efficient use of valuable laboratory bench space.

Modular Design
Provides a cost-effective initial system price, but still allows future expansion into other thermal analysis techniques if laboratory needs change.

Complete Applications and Service Support
Includes a variety of training aids for new TGA users and immediate access to knowledgeable applications and service specialists by telephone.

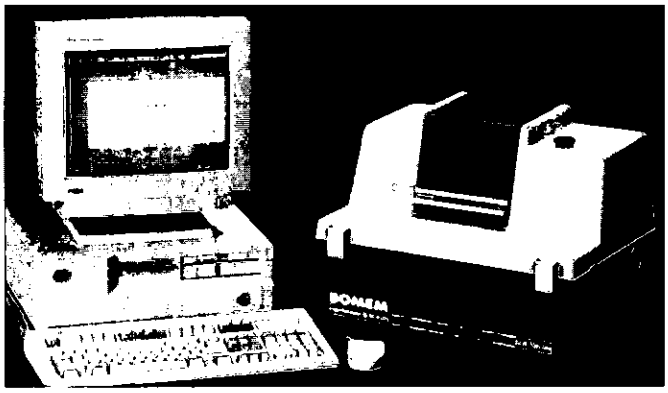
TA Instruments Rheolyst AR 1000

The AR 1000 Rheometer is designed and engineered to assure easy, reliable, trouble-free operation. It is supported by a full range of services, including an applications laboratory, publications, training courses, seminars and a telephone hotline for customer consultation. Highly qualified TA Instruments service personnel, specialised in rheometer maintenance and service, are available throughout the world. All these items reflect TA Instruments

commitment to providing thermal analysis and rheology products and related services that deliver maximum value for your investment.

Contact: Alphatech Systems
Phone: (09) 3770392, Fax: (09) 3098514,
Email: sales@alphatech.co.nz
circle number 25 on the reader reply card

IR AND FTIR SOLUTIONS FROM ALPHATECH



Alphatech Systems provides a range of FTIR and standard IR spectrophotometers designed specifically for industrial users in the plastics/polymers/resins/paints and coatings areas. The instruments are designed for use in factory environments as well as in the laboratory and are easily useable by skilled technicians as well as plant operators.

A variety of options are available including inexpensive, cost effective and reliable units.

Contact: Alphatech Systems
Phone: (09) 3770392, Fax: (09) 3098514,
Email: sales@alphatech.co.nz
circle number 26 on the reader reply card

MAKING SCIENCE ACCESSIBLE TO DEAF STUDENTS

Making science accessible to deaf students is a passion for Christchurch secondary teacher Stephanie Paris.

Stephanie was recently awarded a Royal Society Science & Technology Teacher Fellowship for 1998, and travelled to America to investigate teaching programmes in use in the USA. She spent three weeks on campus at the Gallaudet University in Washington DC — the only liberal arts university for the deaf in the world, and also visited Lexington School for the Deaf in New York City.

Through her studies, travels and extensive reading on techniques, Stephanie has written a set of guidelines for mainstream science teachers who have a deaf or hearing impaired student in their class.

She says making science accessible to deaf students is an area that has not previously been investigated in New Zealand.

"Deaf students generally find science difficult. Many factors contribute to this not least of which is the lack of New Zealand Sign Language terms for science vocabulary used in our classrooms everyday."

Stephanie, who is deaf herself, says deaf students deserve the right to full access to the science curriculum.

"They deserve the opportunity to find careers for themselves in this field. They deserve the right to understand the world around them, not on a superficial level, but at the same level as their hearing peers."

Stephanie's overriding aim is to promote science as a rewarding and achievable career option for the deaf. While she is "reasonably content" with what she achieved during 1998, Stephanie says there is still more to be done to make science accessible to deaf students.

One project in the pipeline is the production of a video about Deaf Adults in Science Related Careers, which the Lotteries Commission has agreed to fund.

"However, the most pressing thing that needs to be focused on is the development of technical signs for science so that students can truly grasp the concepts and phenomena involved."

Stephanie says she is grateful to the Oticon Foundation in New Zealand for contributing towards the cost of her trip to America, and for acknowledging the importance of encouraging deaf students into scientific fields.

CONFERENCES & SEMINARS

12-15 April 1999
Recent Advances In Ring Opening (Metathesis) Polymerisation: Mechanisms - Kinetics Macromolecular Engineering - Applications
Venue: Mons, Belgium
Contact: Dr Philippe Degee
University de Mons-Hainaut
Services des Materiaux Polymeres et Composites
Email: philippe.degee@umh.ac.be
Website: http://www.morris.umh.ac.be/ROMP99/FIRST.htm

14-16 April 1999
Pathways to Technological Literacy
Venue: Auckland, New Zealand
Contact: Email: tenzauck@hotmail.com

14-16 April 1999
TiO_2 99 - New Strategies In An Era of Industry Rationalisation
Venue: Padova, Italy
Contact: Melanie Searle
Intertech Conferences
411 US Route One, Portland, Maine 04105, USA
Tel: (+1-207)-7819800
Fax: (+1-207)-7812150

19-21 April 1999
Carbon Black World 99
Venue: Venice, Italy
Contact: Karen Zacharias
Intertech Conferences
411 US Route One, Portland, Maine 04105, USA
Tel: (+1-207)-7819800
Fax: (+1-207)-7812150

20-21 April 1999
5th International Conference on Operating Pressure Equipment
Venue: Melbourne, Australia
Contact: The Events Manager
Institute of Metals & Materials Australasia Ltd
Fax: (+61-3)-93267272
Email: imma@immanet.asn.au

25-29 April 1999
The 12th International Conference on Wear of Materials
Venue: Atlanta, USA
Contact: Fax: (+44-1865)-843958
Email: a.richardson@elsevier.co.uk
Website: http://www.elsevier.nl/locate/wom99

26-28 April 1999
Drug Discovery Technologies '99 - Selecting and Shaping the Winning Compounds
Venue: Amsterdam, The Netherlands
Contact: Alison Singhal
IBC Global Conferences
Gilmoora House
57-61 Mortimer Street, London W1N 8JX
England, United Kingdom
Tel: (+44-171)-4535491
Fax: (+44-171)-6366858

3-4 May 1999
Chiral USA
Covering chiral technology as applied to the pharmaceutical, agrochemical and fine chemical industries.
Venue: San Francisco, USA
Contact: Spring Innovations
185A Moss Lane, Biamhall, Stockport
Cheshire SK7 1BA, England, United Kingdom
Tel: (+44-161)-4400082
Fax: (+44-161)-4409127

5-7 May 1999
The 1999 British Association of Research Quality Assurance (BARQA) International Congress on The Changing Face Of Quality Assurance
Venue: Dublin, Ireland
Contact: Veronica Fernando
Veritus Consulting
Box Cottage, Church Road, North Waltham
Hants RG25 2BL, England, United Kingdom

12-23 May 1999
Crystal Engineering: From Molecules and Crystals to Materials
Venue: Erice, Italy
Contact: P Spadon
Email: paola@mail.chor.unipd.it
Web Site: www.geomin.unibo.it/orgv/erice/crysteng.htm

16-19 May 1999
6th European Symposium on Polymer Blends
Venue: Mainz, Germany
Contact: Mrs C Münch
Max Planck-Institut für Polymerforschung
Tel: (+49-6131)-379110
Fax: (+49-6131)-379100
Email: espb99@mpip-mainz.mpg.de
Website: www.mpip-mainz.mpg.de/documents/conferences.html

17-21 May 1999
The 2nd International Conference on Microplate Technology, Laboratory Automation and Robotics (MipTech-ICAR'99)
Venue: Montreux, Switzerland
Contact: Bureco
Postfach, CH-4310 Rheinfelden, Switzerland

20-22 May 1999
Three One-Day Conferences on Hazardous Substances and New Organisms
Venue: Wellington, New Zealand
Contact: Institute for International Research
Freepost 2690, Auckland

Tel: (+64-9)-3795892
Fax: (+64-9)-3097986
Email: melindam@iir.co.nz

23-28 May 1999

The 12th International Symposium on Organosilicon Chemistry

Venue: Sendai International Centre, Sendai, Japan
Contact: Professor M Kira
Department of Chemistry, Tohoku University
Sendai, Japan
Fax: (+81-22)-2176589
or Dr Jani Matisons
Ian Wark Research Institute
University of South Australia,
Mawson Lakes, SAA 5095, Australia
Tel: (+61-8)-83023232
Fax: (+61-8)-83023683
Email: jani.matisons@unisa.edu.ua
Website: www.a-chem.eng.osaka-cu.ac.jp/ISOSXII/

31 May - 4 June 1999

4th International Symposium on Functional Dyes

Venue: Osaka, Japan
Contact: Professor Yasuhiko Shirota
Faculty of Engineering, Osaka University
Yamadaoka, Suita, Osaka 565-0871, Japan
Tel: (+81-6)-8797364
Fax: (+81-6)-8777367
Email: isfd@chem.eng.osaka-u.ac.jp

3-6 June 1999

Heleco '99

A conference and exhibition focusing on environmental technology for the 21st century, Heleco '99 will be divided into five topic areas - water, atmosphere, solid waste, environmental management, and urban design and the environment.

Venue: Thessaloniki, Greece
Contact: Horizon
14 Nikis Street, 105 57 Athens, Greece

7-10 June 1999

3rd International Symposium on Molecular Mobility and Order in Polymer Systems

Venue: St Petersburg, Russia
Contact: Symposium Chairman
Professor A A Dariskii
or Mrs I Kovalenko
Institute of Macromolecular Compounds
Bolshoy pr. 31, St Petersburg, 199004 Russia
Tel: (+7-812)-2132907
Fax: (+7-812)-2186869
Email: IMC@macro.spb.su

8-10 June 1999

ET'99

Integrated event covering management, technology and services in the water, waste and environmental sectors.

Venue: Birmingham, England, United Kingdom
Contact: Jim Hughes
Reed Exhibition Companies
Oriel House, 26 The Quadrant, Richmond
Surrey TW9 1DL, England, United Kingdom

8-11 June 1999

International Food Machinery & Technology Exhibition (FOOMA Japan '99)

Venue: Tokyo International Exhibition Center,
Tokyo, Japan
Contact: Secretariat of the International Food Machinery & Technology Exhibition (FOOMA Japan),
Kasumigaseki Bldg. 12F, 3-2-5, Chiyoda-ku,
Tokyo 100-6012, Japan
Tel: +81-3-35037661
Fax: +81-3-35037620

10-11 June 1999

Environmental Risk Management Authority New Zealand Annual Conference

Venue: Wellington, New Zealand
Contact: Karen Cronin
ERMA New Zealand
Tel: (+64-4)-4964826

11-14 June 1999

21st International Exhibition on Environmental Technologies

Venue: Seoul, Korea
Contact: Korea Environmental Preservation Association
Seoul CCI Bldg, 497-66, Tapshimni 5 Dong,
Dongdaemun-Ku, Seoul, Korea
Tel: (+82-2)-22495265 (ext 3)
Fax: (+82-2)-22495267
Email: kepa@hitel.net

20-25 June 1999

CHEMRAWN XII - African Food Security and Natural Resource Management: The New Scientific Frontiers

Venue: Nairobi, Kenya
Contact: Dr Pedro Sanchez
International Centre for Research in Agroforestry
P O Box 30677, Nairobi, Kenya
Tel: (+254-2)-521003
Fax: (+254-2)-520023
Email: p.sanchez@cgnet.com

27-30 June 1999

CHEM-ED 99. Biennial Conference of New Zealand Chemistry Educators - Chemistry: Unravelling Mysteries

Venue: University of Waikato, Hamilton, New Zealand
Contact: Bev Cooper
c/- School of Education, University of Waikato
Private Bag 3105, Hamilton
Tel: (+64-7)-8384382
Fax: (+64-7)-8384555
Email: bcooper@waikato.ac.nz

CONFERENCES & SEMINARS

28 June - 2 July 1999

International Memorial K I Zamaraev Conference on Physical Methods for Catalytic Research at the Molecular Level

Venue: Novosibirsk, Russia

Contact: Professor V N Parmon
Boreskov Institute of Catalysis
5, Prosp. Akad. Lavrentieva,
Novosibirsk, 630090, Russia
Tel: (+7-383)-2343269
Fax: (+7-383)-234056
Email: parmon@catalysis.nsk.su

3-7 July 1999

IV Liquid Matter Conference

Venue: University of Granada, Granada, Spain

The Conference is sponsored by the European Physical Society and the University of Granada. The scope of the IV Liquid Matter Conference is rather broad and the program is based on the following twelve Symposia, entitled: simple liquids and solutions, classical and quantum; molecular liquids and reaction dynamics; ionic liquids and liquid metals; liquid crystals; polymers, polyelectrolytes and gels; colloids, surfactants, emulsions and foams; membranes and biological liquids; fluids in confined geometries, films and interfacial phenomena; supercooled liquids and glasses; phase transitions and nucleation phenomena; rheological properties of liquids; and powder and other granular matter.

Contact: Professor Dr Roque Hidalgo-Álvarez
Departamento de Física Aplicada
Universidad de Granada
Campus de Fuentenueva
E-18071 Granada, Spain
Tel: (+34-58)-243213
Fax: (+34-58)-243214
Email: liquid99@ugr.es

Web Site: http://www.ugr.es/~liquid99

4-9 July 1999

"Science for Pacific Posterity: Environments, Resources and Welfare of the Pacific People"

Venue: This Congress, to be held from 4 to 9 July 1999, will open at the Sydney Opera House on Sunday 4 July and then shift to the Kensington campus of the University of New South Wales for the remainder of the week.

The following themes are being developed for the Congress:

Theme 1	Public Health in the Asia-Pacific Region
Theme 2	Global Environmental Change and the Pacific
Theme 3	Lessons from the Past: Messages for the Future "Unveiling the Scroll of Prophecy: Vital Key to Sustainability"
Theme 4	Natural Disasters: Reduction and Mitigation
Theme 5	Urbanisation and the Environment
Theme 6	Communication in the 21st Century
Theme 7	Alternative and Renewable Energy
Theme 8	Biodiversity
Theme 9	Environmental Management
Theme 10	Coral Reefs of the Pacific Region, Past, Present and Future
Theme 11	Science and Community Knowledge: Partners for Sustainability
Theme 12	Science Education and Communication
Theme 13	"Learning from Nature - The Search for Drugs and Other Bioactives from the Sea"
Theme 14	History of Pacific Science
Theme 15	Heritage Conservation
Theme 16	Peoples of the Pacific

Contact: Email: W.Osullivan@unsw.edu.au

Website: http://www.icmsaust.com.au/PacificScience

4-9 July 1999

Australian International Symposium on Analytical Sciences

Venue: Melbourne Exhibition and Convention Centre
Melbourne, Victoria, Australia

AISAS 99 promises to offer a scientific program of the highest quality with general analytical and chromatography/separation science streams featuring key international speakers and local experts, while at the same time providing an extensive trade exhibition and commercial workshops. Make sure you are part of this historic event. Start thinking about your paper/poster abstract now.

Contact: Associate Professor Philip Marriott
Chair Organising Committee
Tel: (+61-3)-99251786
Fax: (+61-3)-96391321
Email: AISAS@rmit.edu.au

Website: http://www.chem.monash.edu.au/raci/index.html

5-7 July 1999

The New Zealand Statistical Association 50th Anniversary Conference

Venue: Victoria University, Wellington

Contact: nzsa99@mcs.vuw.ac.nz

Possible sections include history, medical statistics, statistics education, data mining, and risk management. Papers in these and other areas will be welcome. The main source of information will be a conference web page that will be running from December 1998 via the web page belonging to the School of Mathematical and Computing Sciences, at Victoria University of Wellington.

Website: http://www.mcs.vuw.ac.nz/

Information and facilities available will include:

* A listing of accommodation options and approximate prices - it will be the responsibility of registrants to find their own accommodation.
* Procedure for registering and submitting abstracts.
* Timetable and listings of invited and contributed talks, which will be updated as the programme develops.

5-8 July 1999

Membrane Separations and Protein Processing Technologies: Industry Short Course and One Day Symposium

Venue: University of Waikato, Hamilton, New Zealand

Contact: Rob McGowan
Centre for Continuing Education
University of Waikato
Private Bag 3105, Hamilton, New Zealand
Email: r.mcgowan@waikato.ac.nz
Website: http://www.tech.waikato.ac.nz/biocourse2/

5-9 July 1999
VIII SCAR International Symposium on Antarctic Earth Sciences
Venue: Wellington, New Zealand
Contact: Dr Fred Davey
Institute of Geological and Nuclear Sciences
P O Box 1320, Wellington, New Zealand
Tel: (+64-4)-5701444
Fax: (+64-4)-4710977
Email: ISAES@qns.cri.nz

11-13 July 1999
Australasian Environmental Engineering Conference
Venue: Auckland, New Zealand
Contact: Conference Secretariat
Northern Regional Office
IPENZ, P O Box 6748, Auckland
Email: aeec99@ipenz.org.nz

11-15 July 1999
2nd International Conference on Biodiversity and Bioresources - Conservation and Utilisation
Venue: Belo Horizonte, Minas Gerais, Brazil
Contact: Professor Alaide Braga de Oliveira
Faculdade de Farmacia - UFMG
Av. Olegario Maciel 2360
30.180112 Belo Horzonte, Brazil
Fax: (+55-31)-3379076
Email: fernao@dedalus.lcc.ufmg.br

12-14 July 1999
International Conference on Ageing Studies and Lifetime Extension of Materials
Venue: Oxford, England, United Kingdom
Contact: Dr L G Mallinson
International Conference on Ageing Studies and Lifetime Extension of Materials
AWE Aldermaston
Reading RG7 4PR, England, United Kingdom
Tel: (+44-118)-9827993
Fax: (+44-118)-9824739
Email: lmallinson@awe.co.uk

12-14 July 1999
The 16th New Zealand Geochemical Group Conference
Venue: Lower Hutt, New Zealand
Contact: Dave Grant-Taylor
Email: d.granttaylor@irl.cri.nz
Tel: (+64-4)-5690000
or Doug Sheppard
Email: d.sheppard@gns.cri.nz
Tel: (+64-4)-5704637
Fax: (+64-4)-5704657

12-15 July 1999
39th Microsymposium, Advances in Polymerisation Methods: Controlled Synthesis of Functionalised Polymers
Venue: Prague, Czech Republic
Contact: Dr Jaromir Lukas
Institute of Macromolecular Chemistry
Academy of Sciences of the Czech Republic
Heyovskeho na. 2, 162 06 Praha 6
Czech Republic
Tel: (+420-2)-360341
Fax: (+420-2)-367981
Email: sympo@imc.cas.cz

14-18 July 1999
1st IUPAC Workshop on New Directions in Chemistry. Workshop on Advanced Materials: Nanostructure Systems
Venue: Hong Kong
Contact: Prof M A El-Sayed
School of Chemistry and Biochemistry
Georgia Institute of Technology
Atlanta, GA 30332-400, USA
Tel: (+1-404)-8940292
Fax: (+1-404)-8940294
Email: mostafa.el-sayed@chemistry.gatech.edu

14-16 July 1999
Biomarkers in Environmental Toxicology
Venue: Christchurch, New Zealand
Contact: Louise Tremblay
Landcare Research, Lincoln
Email: tremblayl@landcare.cri.nz

15-17 July 1999
1st IUPAC Workshop on New Directions in Chemistry. Workshop on Advanced Materials: Nanostructured Systems
Venue: Hong Kong
Contact: Professor M A El-Sayed
School of Chemistry and Biochemistry
Georgia Institute of Technology, Atlanta
GA 303320400, USA
Tel: (+1-404)-8940292
Fax: (+1-404)-8940294
Email: mostafa.el-sayed@chemistry.gatech.edu

18-22 July 1999
10th International Symposium on Organo-Metallic Chemistry Directed Towards Organic Sythesis (OMCOS 10)
Venue: Versailles, France
Contact: Professor J P Genet
Laboratoire de Synthese Selective Organique et Produits Naturels
E N S C P - UMR CNRS 7573
11 rue Pierre et Marie Curie
75231 Paris Cedex 05, France
Tel: (+33-1)-44276743

Fax: (+33-1)-44071062
Email: genet@ext.jussieu.fr

18-23 July 1999
12th International Symposium on Carotenoids
Venue: Cairns, Australia
Contact: Professor George Britton
School of Biological Sciences
The University of Liverpool
Crown Street, Liverpool, L69 3BX
England, United Kingdom
Fax: (+44-151)-7944349

19-22 July 1999
19th Discussion Conference on the Rheology of Polymer Systems
Venue: Prague, Czech Republic
Contact: Dr Jaromir Lukas
Institute of Macromolecular Chemistry
Academy of Sciences of the Czech Republic
Heyovskeho na. 2, 162 06 Praha 6
Czech Republic
Tel: (+420-2)-360341
Fax: (+420-2)-367981
Email: sympo@imc.cas.cz

19-23 July 1999
International Symposium on Ionic Polymerisation
Venue: Kyoto, Japan
Contact: Dr Shiro Kobayashi
Department of Materials Chemistry
Graduate School of Engineering
Kyoto University, Kyoto 606-01, Japan
Tel: (+81-75)-7535608
Fax: (+81-75)-7534911
Email: kobayashi@mat.polym.kyoto-u.ac.jp

25-30 July 1999
14th International Conference on the Chemistry of the Organic Solid State
Venue: Cambridge, England, United Kingdom
Contact: Email: ICCOSSXIV@ch.cam.ac.uk

25-30 July 1999
Analytical Science into the Next Millenium (SAC 99)
Venue: Dublin, Ireland
Contact: Professor Malcolm R Smyth
Faculty of Science
Dublin City University, Dublin 9, Ireland
Tel: (+353-1)-7045308
Fax: (+353-1)-7045503
Email: smythm@dcu.ie

26-30 July 1999
6th International Conference on the Structure of Surfaces
Venue: Vancouver, Canada
Contact: K A R Mitchell
Department of Chemistry
University of British Columbia
Vancouver, BC V6T 1Z1, Canada
Email: karm@chem.ubc.ca
Web Site: www.conferences.ubc.ca/icsos.htm

26-31 July 1999
XXVI International Conference on Solution Chemistry
Venue: Fukuoka City, Kyushu, Japan
Contact: Professor Hitoshi Ohtaki
Department of Chemistry
Faculty of Science and Engineering
Ritsumeikan University, 1-1-1 Noji-Higashi
Kusatsu 525, Japan
Tel: (+81-775)-612777
Fax: (+81-775)-612659
Email: ohtaki@bkc.ritsumei.ac.jp

1-6 August 1999
Eleventh American Conference on Crystal Growth and Epitaxy
Venue: Tucson, Arizona, USA
Contact: T Gentile
ACCGE-11 Sec.
P O Box 3233, Thousand Oaks
CA 91359-0233, USA
Fax: (+1-805)-4924062
Email: aacg@lafn.org
Web Site: www.aml.arizona.edu/aacg

2-6 August 1999
14th International Symposium on Plasma Chemistry
Venue: Prague, Czech Republic
Contact: Prof M Hrabovsky
Institute of Plasma Physics
Za Slovankou 3, P O Box 17, 182 21 Praha 8,
Czech Republic
Tel: (+42-2)-824751
Fax: (+42-2)-8586389
Email: hrabov@ipp.cas.cz

4-13 August 1999
18th IUCr General Assembly and International Congress of Crystallography
Venue: Glasgow, Scotland, United Kingdom
Web Site: www.chem.gla.ac.uk/iucr99/

6-13 August 1999
Frontiers in Chemistry: Molecular Basis of the Life Sciences
Venue: Berlin, Germany
Contact: IUPAC Secretariat
Tel: (+1-919)-4858700
Fax: (+1-919)-4858706
Email: secretariat@iupac.org

7-13 August 1999
IUPAC General Assembly
Contact: IUPAC Secretariat
Tel: (+1-919)-4858700

Fax: (+1-919)-4858706
Email: secretariat@iupac.org

14-19 August 1999
IUPAC Congress
Venue: Berlin, Germany
Contact: Gesellschaft Deutscher Chemiker - GDCh
P O Box 90 04 40
60444 Frankfurt Am Main, Germany
Tel: (+49-69)-7917 358/360/366
Fax: (+49-69)-7917475
Email: tg@gdch.de

22-26 August 1999
ACS National Meeting: Block Copolymers - Designing Molecules for Applications
Venue: New Orleans, Louisiana, USA
Contact: Nikos Hadjichristidis
Department of Chemistry
University of Athens
Tel/Fax: (+30-1)-7249103
Email: nhadjich@atlas.uoa.gr
or Jimmy Mays, Department of Chemistry
Tel: (205)-9348101
Fax: (205)-9342543
Email: jmays@uab.edu

22-26 August 1999
218th ACS National Meeting: Optical Polymers - Advances in Optical Fibres and Wave Guides
Venue: New Orleans, USA
Contact: Associate Professor Julie P Harmon
Department of Chemistry
University of South Florida
Tel: (813)-9743397
Fax: (813)-9741733
Email: harmon@chuma.cas.usf.edu
or Dr Raja Mani
Optical Polymer Research
Tel: (352)-3781027
Fax: (352)-3737712
Email: maniraja@hotmail.com

26-26 August 1999
ACS Fall Meeting: Hydrogen Bonding for Macromolecular Self-Assembly
Venue: New Orleans, USA
Contact: Professor Andy Griffen
Chemistry and Biochemistry
University of Southern Mississippi
Tel: (601)-2664715
Fax: (601)-2665138
Email: anselm.griffen@gradsch.ccain.usm.edu
or Professor Dr Reimund Stadler
Macromolecular Chemistry II
University of Bayreuth/Building NW II
Tel: (+49-921)-553399
Fax: (+49-921)-553393
Email: stadler@akstadler.che.uni-bayreuth.de

22-27 August 1999
Flavour Release: Linking Experiments, Theory and Reality. A Joint American Chemical Society/Royal Society of Chemistry Symposium
Venue: New Orleans, Louisiana, USA
Contact: Andy Taylor
Tel: +44-115-9516144
Fax: +44-115-9516154
Email: andy.taylor@nottingham.ac.uk

1-5 September 1999
The 5th International Symposium on Polymers for Advanced Technologies (PAT'99)
Venue: Tokyo, Japan
Contact: Secretariat, PAT'99-Tokyo
Waseda University, Tokyo, Japan
Tel: (+81-3)-52863120
Fax: (+81-3)-32054740
Email: oyaizu@mn.waseda.ac.jp
Website: www.rise.waseda.ac.jp/sympo/pat.html

1-30 September 1999
ECSOC-3 - 3rd Electronic Conference on Synthetic Organic Chemistry
Organised by Molecular Diversity Preservation International
Contact: Dr Esteban Pombo-Villar
ECSOC-3 Chairman
Preclinical Research, Novartis Pharma AG
CH-4002 Basel, Switzerland
Tel: (+41-61)-3249865
Fax: (+41-61)-3249794
Email: esteban.pombo@pharma.novartis.com
or Dr Shu-Kun Lin
ECSOC-3 Secretary
Molecular Diversity Preservation International
Saengergasse 24
CH-4054 Basel, Switzerland
Tel: (+41-79)-3223379
Fax: (+41-61)-3028918
Email: lin@mdpi.org
Website: http://www.mdpi.org/ecsoc-3.htm

5-9 September 1999
Macromolecules '99: Polymers in the New Millenium
Venue: Bath, England, United Kingdom
Contact: Dr A J Amass, Macromolecules '99
CEAC, Aston University, Aston Triangle
Birmingham B4 7ET, United Kingdom
Tel: (+44-121)-3593611
Fax: (+44-121)-3594094
Email: a.j.amass@aston.ac.uk

5-10 September 1999
31st Colloquium Spectroscopicum Internationale 1999
Venue: Ankara, Turkey
Contact: Prof Dr O Yavuz Ataman
Department of Chemistry
Middle East Technical University
TR-06531 Ankara, Turkey

Tel: (+90-312)-2103232
Fax: (+90-312)-2101280
Email: xxxicsi@rorqual.cc.metu.edu.tr

6-10 September 1999
8th International Symposium on Macromolecule-Metal Complexes (MMC-VIII)
Venue: Tokyo, Japan
Contact: Symposium Secretariat, MMC-8
Waseda University, Tokyo, Japan
Tel: (+81-3)-52863120
Fax: (+81-3)-32054740
Email: macro@mn.waseda.ac.jp

7-11 September 1999
Horizons of Organic and Organoelement Chemistry, to the Memory of Professor A N Nesmeyanov, on the 100th Anniversary of His Birth
Venue: Moscow, Russia
Contact: Professor Y N Bibnov, INEOS
Vavilov str. 28, Moscow
Tel: (+7-095)-1356165
Fax: (+7-095)-1355085
Email: dir@ineos.ac.ru

20-21 October 1999
8th New Zealand Coal Conference
Venue: Wellington, New Zealand
Contact: Conference Secretariat
Eighth New Zealand Coal Conference
P O Box 31-244, Lower Hutt, Wellington
Tel: (+64-4)-5703700
Fax: (+64-4)-5703701

6-10 November 1999
4th Congress of Toxicology in Developing Countries
Venue: Antalya, Turkey
Contact: Prof Semra Sardas
Gazi University
Faculty of Pharmacy Toxicology Department
TR 06330 Ankara Turkey
(+90-312)-2123009
Email: ek03-k@tr-net.net.tr

14-17 November 1999
Concepts and Needs for Dielectric Constant <0.15 mm Interconnect Materials: Now and the Next Millenium
Venue: Monterey, California, USA
Contact: Dr Kennth Carter
IBM Almaden Research Centre
Tel: (408)-9272617
Fax: (408)-9273310
Email: kcarter@almaden.ibm.com
or Dr Devendra Kumar, Novellus Systems
Tel: (408)-9534057
Fax: (408)-9433450
Email: devendra.kumar@novellus.com

17-19 November 1999
International Conference on Thermophysical Properties of Materials (TTPM99)
Venue: Singapore
Contact: Ms Goh Bee Dee/Ms Merlin Toh
Nanyang Technological University
Tel: (+65)-7994723
Fax: (+65)-7930997
Email: TPPM99@ntu.edu.sg
Website: www.ntu.edu.sg/sas/events/tppm99.html

21-24 November 1999
1999 NZIC Conference: Chemistry in New Zealand - A Showcase of Activities and Opportunities
Venue: Victoria University of Wellington, Wellington
Contact: Associate Professor Jim Johnston
Victoria University of Wellington
or Conference Office
School of Chemical and Physical Sciences
Victoria University of Wellington
Email: Margaret.Brown@vuw.ac.nz
Website: www.vuw.ac.nz/chemistry/nzic99

27 November - 2 December 1999
23rd RACI Australian Polymer Symposium
Venue: Geelong, Victoria, Australia
Contact: Associate Professor W D Cook
Department of Materials Engineering
Monash University
Clayton, VIC 3168, Australia
Tel: (+61-3)-99054926
Fax: (+61-3)-99054940
Email: wayne.cook@eng.monash.edu.au

13-17 December 1999
International Conference on Cleaner Production and Sustainable Development '99
Venue: Taipei International Convention Centre, Taipei
Taiwan, Republic of China
Contact: Dr Young Ku, Professor
Chairman of Academic Committee
Department of Chemical Engineering
National Taiwan University of
Science and Technology
43, Sec.4, Keelung Road, Taipei, Taiwan
Republic of China
Tel: (886-2-27376621)
Fax: (886-2-27376644)
Email: ku@ch.ntust.edu.tw

30 January - 4 February 2000
5th IUPAC Symposium on Bio-Organic Chemistry
Venue: New Delhi, India
Contact: Professor S Ranganathan
Biomolecular Research Unit
Regional Research Laboratory
Trivandrum 695 019, India
Tel: (+91-471)-491459
Fax: (+91-471)-490186

CONFERENCES & SEMINARS

6-11 February 2000
RACI 11th National Convention
Venue: Canberra, ACT, Australia
Contact: Dr Graeme Moad
Molecular Science, CSIRO
Private Bag 10 Clayton South MDC
Clayton, VIC 3169, Australia
Tel: (+61-3)-95452509
Fax: (+61-3)-95452446
Email: graeme.moad@molsci.csiro.au

19-23 March 2000
Water 2000 Conference and Expo - "Guarding the Global Resource"
Venue: Auckland, New Zealand
Contact: New Zealand Water and Wastes Association
P O Box 13880
Onehunga, Auckland, New Zealand
Tel: (+64-9)-6363636
Fax: (+64-9)-6361234
Email: water@nzwwa.co.nz
Website: http://www.nzwwa.org.nz

22-25 March 2000
Chain Growth Polymerisation - New Chemistry for the New Millenium
Venue: Santa Rosa, California, USA
Contact: Professor Bruce Novak
University of Massachusetts
Tel: (413)-5452160
Fax: (413)-5450764
or Kris Matyjaszewski
Carnegie Mellon University
Department of Chemistry
Tel: (412)-2683209
Fax: (412)-2686897
Email: km3b@andrew.cmu.edu

2-5 April 2000
Foods - Nutraceuticals - Confectionery - Beverages and Cosmetics
Venue: Doubletree Mission Valley Hotel, San Diego, California, USA
Contact: Mr P C Hereld,
Managing Director
The Hereld Organisation
200 Leeder Hill Drive
Hamden CT 06517, USA
Tel/Fax: +1-203-2816766

4-10 April 2000
10th International Conference on High Temperature Materials Chemistry
Venue: Aachen, Germany
Contact: Professor K Hilpert
Forschungszentrum Julich GmbH
Institut fur Werkstoffe der Energietechnik (IWE 1)
52425 Julich, Germany
Tel: (+49-2461)-613280
Fax: (+49-2461)-613699
Email: k.hilpert@fz-juelich.de

21-25 May 2000
10th International IUPAC Symposium on Mycotoxins and Phycotoxins
Venue: Sao Paulo, Brazil
Contact: Dr Myrna Sabino
Instituto Adolfa Lutz
AV Dr. Arnaldo 355
Sao Paulo, Brazil, 01246-902
Fax: (+455-11)-8533505
Email: myrna@sti.com.br

1-5 July 2000
13th International Conference on Organic Synthesis
Venue: Warsaw, Poland
Contact: Professor M Chmielewski
Institute of Organic Chemistry
Kasprzaka 44, 01-224 Warsaw 42
P O Box 58, Poland
Tel: (+48-22)-6318788
Fax: (+48-22)-6326681
Email: ichos@ichf.edu.pl

9-14 July 2000
38th International Symposium on Marcromolecules
Venue: Warsaw, Poland
Contact: Professor Stanislaw Penczek
Polish Academy of Sciences
ul. Sienkiewicza 112, 90363 Lodz, Poland
Tel: (+48-42)-6819815
Fax: (+48-42)-6847126
Email: spenczek@bilbo.cbmm.lodz.pl

9-14 July 2000
34th International Conference on Coordination Chemistry
Venue: Edinburgh, Scotland, United Kingdom
Contact: Professor P Tasker, Chairman
Dr John F Gibson, Secretary
The Royal Society of Chemistry
Burlington House, London W1V OBN
England, United Kingdom
Tel: (+44-171)-4403321
Fax: (+44-171)-7341227
Email: gibsonj@rsc.org

17-20 July 2000
40th Microsymposium on Polymers In Medicine
Venue: Prague, Czech Republic
Contact: Dr Jaromir Lukas
Institute of Macromolecular Chemistry
Academy of Sciences of the Czech Republic
Heyovskeho na. 2, 162 06 Praha 6
Czech Republic
Tel: (+420-2)-360341
Fax: (+420-2)-367981
Email: sympo@imc.cas.cz

CONFERENCES & SEMINARS

6-11 August 2000
16th IUPAC Conference on Chemical Thermodynamics
Venue: Halifax, Nova Scotia, Canada
Contact: Dr Peter G Kusalik
Department of Chemistry
Dalhousie University
Halifax, Nova Scotia B3H 4J3, Canada
Tel: (+1-902)-4943627
Fax: (+1-902)-4941310
Email: kusalik@is.dal.ca

14-18 August 2000
12th International Conference on Thermal Analysis and Calorimetry
Venue: Copenhagen, Denmark
Contact: Dr O Toft Sorensen
Risoe National Laboratory
Fax: (+45)-46351173

20-25 August 2000
XIIIth International Congress on Rheology
Venue: Cambridge, United Kingdom
Contact: Dr D M Binding
Department of Mathematics
Fax: (+45-1970)-622777
Email: rheology2000@aber.ac.uk

1 September 2000
22nd International Symposium on the Chemistry of Natural Products
Venue: Sao Paulo, Brazil
Contact: Dr M Fatima das G F da Silva
Universidade Federal de Sao Carlos
Depto. de Quimica, Via Washington Luiz
km 235, CP676, Sao Carlos, Brazil
Tel: (+55-16)-2748208
Fax: (+55-16)-2748350
Email: dmfs@power.ufscar.br

3-8 September 2000
11th International Biotechnology Symposium
Venue: Berlin, Germany
Contact: Professor G Kreysa
DECHEMA eV
c/o 11th IBS, Theodor-Heuss-Allee 25
60486 Frankfurt/Main, Germany
Tel: (+49-69)-7564205
Fax: (+49-69)-7564201
Email: info@dechema.de

8-10 November 2000
2nd International Symposium on Food Packaging - Ensuring the Safety and Quality of Food
Venue: Vienna, Australia
Contact: Dr L Contor
ILSI Europe, 83, Avenue E. Mounier, Box 6,
B-1200, Brussels, Belgium
Tel: (+32-2)-7620044
Fax: (+32-2)-7710014
Email: laura@ilsieurope.be

9-13 December 2000
Poly Millenium 2000
Venue: Hilton Waikoloa Village, Waikoloa, Hawaii
Contact: William H Daly
Department of Chemistry
Louisiana State University
Email: bill.daly@chem.lsu.edu

14-19 December 2000
Pacifichem 2000
Venue: Waikiki, Honolulu, Hawaii
Contact: Professor B Halton
Department of Chemistry
Victoria University of Wellington
P O Box 600
Wellington, New Zealand
Fax: (+64-4)-4955241
Email: brian.halton@vuw.ac.nz

26 August - 1 September 2001
XXXIV International Congress of Physiological Sciences "From Molecule to Malody"
Venue: Christchurch, New Zealand
Contact: The Conference Company
P O Box 90-040, Auckland, New Zealand
Tel: (+64-9)-3601240
Fax: (+64-9)-3601242
Email: info@tcc.co.nz

BIOMARKERS IN ENVIRONMENTAL TOXICOLOGY

Christchurch
14 - 16 July 1999

The focus of this scientific meeting, will be to critically evaluate the development of biomarkers and identify areas of research that need to be addressed in order to facilitate the application of these tools in risk assessment, screening and environmental monitoring protocols.

Internationally recognised keynote speakers will include:
Dr L Earl Gray Jr, US-EPA, USA
Dr Michael Hooper, TTIEHH, USA
Dr Michael Moore, NRCET, Australia
Dr Jason Weeks, ITE, United Kingdom
Dr Philippe Garrigues, Universite de Bordeaux 1, France

Abstracts for oral and poster presentations (up to 300 words) should be submitted and forwarded to:
Louis Tremblay, Landcare Research, Lincoln
Email: tremblayl@landcare.cri.nz by 15 February 1999

PACIFICHEM 2000

PANTOSCOPIC PROGRAMME PERFECTED, PAEAN PROMISED - PLEASE PARTICIPATE

Pacifichem 2000, the millennium celebration for chemists (December 14-19, 2000, Honolulu, Hawaii), now has its scientific programme almost completed. Already 167 symposia have been approved with only a further 10 remaining under consideration and essentially all of the available Congress time and space has been committed. However, the Organising Committee is cognisant of the need to respond to significant breaking areas of our science and space for such has been taken into consideration. A listing of the approved symposia for the ten Congress thematic areas appears below.

The Organising Committee of Pacifichem is to sponsor 40 young chemistry professionals from the developing areas of the Pacific basin. Every effort will be made to publicise these Young Scholar awards. However, I encourage anyone aware of an appropriate candidate in a developing country (under 40 years of age and in their first professional position) to advise them and the NZIC representative of this. Awards are to assist with travel and accommodation expenses and are $US1000 plus complimentary Congress registration.

The 2000 Congress will incorporate a Student Paper Competition that is open to all PhD registered candidates. Posters will be judged during one session but in order to ensure the best opportunities for discussion of the work they will be represented in the most relevant symposium poster session. NZIC has elected to sponsor one NZIC student member who is a PhD candidate to Pacifichem 2000 to enter the Student Paper Competition. The cost of essential transport, accommodation and registration will be met; the student will be selected at the 1999 NZIC Conference in Wellington; full details appear elsewhere in this issue.

Further details on the Pacifichem Congress are available from: B Halton (Professor of Chemistry, Victoria University, P O Box 600. Wellington; Email: brian.halton@vuw.ac.nz).

Abstract submission deadline is April 2000 and Registration by November 2000. Details will appear in *Chemistry in New Zealand* well ahead of the closing dates.
Website: www.acs.org/meetings/pacific

PACIFICHEM 2000 - NEW ZEALAND POSTGRADUATE STUDENT AWARD

The 2000 International Congress of Pacific Basin Societies (Pacifichem 2000) will be held in Honolulu, December 14-19, 2000 and operate over the ten broad subject areas of Agrochemistry, Analytical Chemistry, Bioscience and Technology, Chemistry & The Community, Environmental Chemistry, Inorganic Chemistry, Macromolecular Chemistry, Medicinal Chemistry, Organic Chemistry, and Physical & Theoretical Chemistry (Congress Symposia that have been approved number over 165 and are listed separately in this issue) and each will consist of thematic symposia and general sessions.

The New Zealand Institute of Chemistry is pleased to announce the sponsorship of one PhD student to attend Pacifichem 2000. The candidate chosen will receive travel, accommodation, and student registration costs. She/he must agree to present a poster at the Congress in the student paper competition which requires presentation also in one of the thematic symposia that have been selected by the Pacifichem Organising Committee. Attendance at Congress events for the duration of the meeting is a further requirement.

The successful candidate at the time of both selection and attendance at Pacifichem 2000 will:

a) be a registered PhD candidate in Chemistry or Biochemistry at a New Zealand university;
b) have completed not less than eighteen months of full-time PhD registration (or equivalent) at the time of the Congress and expect to remain as such until mid-2001 or later;
c) be a graduate of a New Zealand university and a permanent New Zealand resident;
d) be a member of the New Zealand Institute of Chemistry from the time of application and remain so at least until completion of study.

Selection of the NZIC Student Awardee will be made by a panel of judges from poster presentation at the 1999 NZIC National Conference in Wellington. Entry is open to any PhD student who meets the criteria detailed above. A statement to this effect must be submitted at the time of seeking selection by way of abstract submission for the 1999 NZIC meeting. The submittal letter must state that the poster is for judging in the student poster competition. The costs of attending the Wellington NZIC meeting are the responsibility of each candidate but the soliciting of sponsorship from their Department/School/NZIC Branch is encouraged.

The successful candidate will be advised by the end of the NZIC Conference well in advance of the April 2000 deadline for abstract material to be with the Pacifichem Office in Washington.

Candidates wishing to be considered for selection of the award should forward (to The Hon. Secretary, NZIC, P O Box 39-283, Howick, Auckland) by August 30, 1999:

i) a statement signifying their desire for selection;
ii) a non-technical statement of not more than 250 words to justify why they should be selected;
iii) a confidential reference from their PhD supervisor.
iv) an agreement that they will provide a general paper on their work suitable for publication in *Chemistry in New Zealand* after return from Pacifichem 2000.

SYMPOSIA APPROVED FOR PACIFICHEM 2000

The lists that follow are in order of receipt of the symposium proposal and do not imply any programming decisions.

AGROCHEMISTRY

- Immunochemical Biomonitoring for Environment Chemicals
- Molecular Designs of Food Proteins for Industrial Applications

- Functional Food Ingredients: Trends and Prospects
- Utilisation of Biomass for the Production of Chemicals in the Twenty First Century
- Quality of Fresh and Processed Food
- Industrial Enzymes
- Chemical Modification, Properties and Usage of Lignin
- Lignocellulosics Science and Technology: From Laboratory to Market
- Chemical Ecology of Plant-Microbe Interactions and Biochemistry of Plant Resistance to Diseases and Nematodes
- Bioconversion of Lignocellulosics to Ethanol and Co-Products
- Food and Beverage Antioxidants in Health and Disease

ANALYTICAL CHEMISTRY
- Electrochemical Sciences
- Liquid-Liquid Interfaces in Analytical Sciences
- Soft X-ray Spectroscopy: New Evaluation of Chemical Composition of Functional Materials
- Ultrasensitive Chemical Measurement and Characterisation
- Separation Science: Trends for the New Century
- Novel Measurements of Gas Phase Ions
- Elemental Mass Spectrometry for a New Millennium
- MicroBioanalytical Chemistry: Separations and Manipulations of Micron Size Domains
- Chemical and Biochemical Sensors
- Recent Developments in Field Analysis
- Raman Spectroscopy: Coming of Age in the New Millennium
- Chemical Sensors Based on Chemical Recognition

BIOSCIENCE & TECHNOLOGY
- Pyridoxal Biocatalysis: Fine Catalytic Mechanism and Application
- Chemical Regulation of Bioreactions and Biorecognitions
- Peptide Chemistry as Life Molecular Science
- Controlled Bio-Architecture by Inorganic and Organic Molecules
- New Frontiers of Solid State NMR
- Bioengineering of Extremophiles and Extremozymes
- Medical Applications of Nucleic Acid Molecules
- Biomolecular Structure and NMR
- Biosynthesis of Natural Products
- Evolution of Enzyme Function
- Xenobiotic Enzymology
- Multiple Solutions to the Same Chemical Problems
- Nucleic Acid-Protein Complexes as Drug Receptors
- Metal Thiolate Clusters in Biological Systems: The Biochemistry and Chemistry of Group 11 and 13 Metals and their Reactions with Metallothioneins, Phytochelatins, Gamma-EC Peptides and Related Metal Complexes
- Environmental Biotechnology
- Marine Bioproducts of High Value
- Glycobiology

CHEMISTRY AND THE COMMUNITY
- Environmentally Benign (or Friendly) Chemistry Including Microscale and Small Scale Laboratory
- The Changing Chemical Scene in the Pacific Basin
- International Relationship in Chemical Education in the 21st Century
- Testing with Technology
- Teaching Aspects in Chemistry: Curriculum Developments in Analytical Chemistry
- Chemistry for Elementary Schools
- Catalysis and Catalytic Processes for Efficient Chemical Synthesis
- Research Supported Teaching/Learning Innovations
- Laboratory Education in the 21st Century

ENVIRONMENTAL CHEMISTRY
- Astrobiochemistry and Origins of Life
- Environmental Chemistry of Main Group Organo-Metallics
- Photochemistry of Freshwater and Marine Environments and its Impact on Biogeochemical Cycles
- Environmental Applications of Ionising Radiation
- Sampling and Analysis for Verification with the Chemical Weapons Convention
- Characterisation, Performance and Fouling of Water Treatment Membranes
- Chemical and Biochemical Technology for Improving the Environment
- The Chemistry of Carcinogenesis
- Plasma Chemistry and Technology for Green Manufacturing, Pollution Control, and Processing Applications

INORGANIC CHEMISTRY
- Selective Chemical Transformation on Late Transition Metal Complexes
- Selective Catalysis for Environmental Applications
- Multifunctionality of Inorganic, Organic, and Their Hybrid Solids, Part 1. Conductivities and Related Properties
- Multifunctionality of Inorganic, Organic, and Their Hybrid Solids, Part 2. Molecular Magnetism and Related Properties
- Recent Progress in Rare Earth Chemistry
- Polyoxometalate Chemistry for Nano-Composite Design
- Advances in Inorganic Fluorine Chemistry: New Synthetic Methods, Applications in Industries and Material Sciences, and Computational Aspects
- The Inorganometallic Chemistry of Group 13-16 Elements
- Development of Biofunctional Metal Complexes
- Nuclear Hyperfine and Exotic Particle Techniques for Studying Chemical States
- Metal Complexation in Colloid and Polymer Systems
- Fundamental Studies on Coal for the New Century
- Main Group Chemistry I: Advances in Synthesis, Theory and Applications
- Main Group Chemistry II: Low Valent, Low Coordination Number and Cluster Compounds
- Structure and Dynamics of Solute-Solvent Interactions
- Oxygen Activation by Metalloproteins and Their Models
- Inorganic Organometallic and Biological Chemistry of Metal Sulfides
- Organometallic Chemistry of Early Transition Metals and Lanthanides
- Bio-inspired Molecular Design of Multinuclear Metal Centers
- Metal-mediated Nucleophilic Cleavage of Nucleic Acids
- Reservoir Geochemistry
- Chemistry and Application of Metal Complexes of Mixed-Donor Multidentate Ligands
- Twenty Years of Organic Superconductors: New Materials - New Insights
- New Developments and Directions in Inorganic Charge Transfer Complexes
- Radioisotope Production and Applications in the New Century
- Fundamental and Technological Advances in Actinide Chemistry
- Electron and Atom Transfer Chemistry of the Late Transition Metals

- The Chemistry of Thin Film Formation
- Science with Radioactive Beams
- Chemistry and Biology of Copper
- New Materials from Organometallic and Coordination Chemistry
- Recognition and Binding: Ions and Molecules
- The Chemical Effects of Ultrasound

- **MACROMOLECULAR CHEMISTRY**
- Advanced NMR Characterisation of Polymers: Precise Structural Analyses & Interpretation of Macroscopic Properties
- Polymer Thin Film Interfaces
- High Performance Polymers
- Photonic Processes in Polymers and Self-Organised Materials
- Structures and Properties of Polymer Alloys
- Self-Ordering Phenomena in Polymeric Systems: From Microscopic to Mesoscopic Scales
- Precision Polymerisations and Controlled Supramolecular Architectures
- Liquid Crystalline Polymers: Self-Organisation of Macromolecules with Well-Controlled Orientation and Polarity in the Liquid Crystalline Field
- Photophysics and Photochemistry of Polymeric Materials
- Reactive Polymer Processing
- Conjugated Polymers
- New Methodologies in Polymer Synthesis
- Aromatic Azo Materials and Applications
- Self-Assembly in Water-Soluble Polymers
- Dendrimers and Hyperbranched Polymers - Synthesis, Structure, and Properties
- Characterisation and Modelling of Membrane and Barrier Polymers
- Associations in Solutions: Amphiphiles, Macromolecules and Colloids
- Radiation Chemistry of Polymers

MEDICINAL CHEMISTRY
- Chemistry and Signal Transduction
- The Neurochemistry of Excitatory Amino Acids
- Molecular Recognition Using Nucleic Acids and Their Related Substances
- Recent Advances in Protease Inhibitor Design
- Mathematical and Computational Aspects of Molecular Design
- Viral Serine Proteases
- Cysteine Proteases
- Advances in Radiopharmaceutical Chemistry
- Alzheimer's Disease: Receptors and Small Molecule Therapies
- Radionuclides for Therapeutic Oncology
- Frontiers in Antibiotics: Synthesis, Design and Mode of Action
- Next Generation Therapeutics

ORGANIC CHEMISTRY
- Reactive Intermediates and Unusual Molecules
- Chemistry of the Organic Solid State: Synthesis, Structure and Reactivity
- π-Electronic Systems with Novel Structure
- Strategy for Molecular and Supramolecular Photochemistry
- New Synthetic Methods in Organofluorine Chemistry
- New Strategies to Transition Metal Catalysed or Mediated Organic Synthesis
- New Developments in Organic Radical Chemistry
- Prospects for Automated Liquid-Phase Synthesis in the 21st Century
- Photoremoveable Protecting Groups and Caged Compounds: Principles and Applications
- Targeted Pursuits of Challenging Natural Molecules
- Organic and Combinatorial Chemistry on Solid Supports
- Discovery and Development of Asymmetric Synthesis and Chiral Technology
- New Developments in Heterocylic Chemistry
- Marine Natural Products Chemistry
- Molecular Oxygen and Organic Peroxides in Chemistry and Biology
- Organic Reactions in Aqueous Media
- Free Radicals: From Molecules to Materials
- Organic and Biological Electrochemistry: Fundamentals and Applications
- Biocatalysis in Organic Synthesis
- Organic Photochemistry
- Cycloaddition and Annulation Strategies
- Bioorganic Reaction Mechanisms
- Use of Chemical Information in Organic Synthesis
- Transition Metal Facilitated Reactions Leading to Organic Heterocycles
- The Boundary Between Long Bond and Short Non-Bonds

PHYSICAL & THEORETICAL CHEMISTRY
- Solvated Molecules and Ions: from Clusters to Condensed Phases
- Recent Progress in the Science and Technology of Fullerenes and Nanotubes
- Chemical Applications of Synchrotron Radiation
- Nonlinear Dynamics in Chemistry
- Electrochemical Surface Science at Molecular/Atomic Resolution
- Solvation Structure and Reactivity in Supercritical Fluids
- Mathematical Characterisation of Structure and Properties of Molecules
- New Frontiers in Chemical Reaction Dynamics
- Laser Control and Manipulation of Molecules
- Materials Chemistry on Oxide and Carbide Surfaces
- Fluids at Interfaces
- Computational Quantum Chemistry: Theoretical and Experimental Perspectives
- Advances in Quantum Monte Carlo
- The Science and Technology of TiO_2 Photocatalysis
- The Structure and Dynamics of Photogenerated Intermediates in Solution: Vibrational and Electronic Studies
- Nanomaterials: Synthesis, Characterisation and Catalysis
- Surfactant Science and Technology
- Physical Chemistry/Chemical Physics of Ion Channels
- Structure, Dynamics, and Reactions of Small Clusters
- Photon- and Electron-Induced Processes on Surfaces
- Large Molecule Vibrational Dynamics

For further information please contact:
Professor B Halton, Professor of Chemistry, Victoria University,
P O Box 600, Wellington
Fax:(+64-4) 4955241
Email: brian.halton@vuw.ac.nz
Website: www.acs.org/meetings/pacific

NEW PRODUCTS

ELIMINATE CONTAMINATION FROM YOUR MOST COMMONLY USED SOLVENT: WATER !

High purity water is the starting point for most critical standards, buffers, and reagents used in sensitive analysis. Studies show that even double- and triple- distilled water contains impurities easily detected with today's sensitive instruments.

Organic and ionic contaminants in high purity water can cause baseline shift or background interference which may obscure key components in the sample.

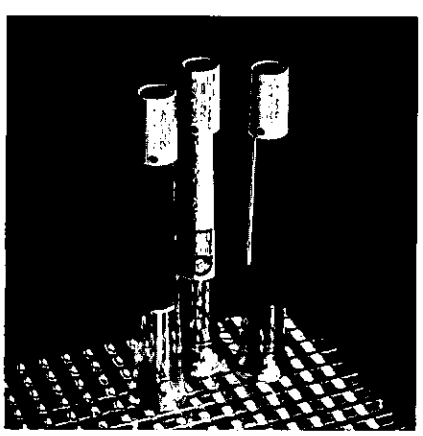
Impurities can also lead to equipment failure and downtime.

For these reasons, the trend is towards the use of multiple technology water systems, which combine a number of purification technologies. A water purification system which meets and exceeds all requirements of today's sensitive instrumental analyses is the new generation Milli Q. Offering unique design features like, upgradeability, all equating to a sound investment for the future.

For further information, or a free sample to trial this exciting product,

Contact: Jarrod Percy, Millipore Product Manager,
Biolab Scientific
Free Phone: 0800 933966 extn 785
Email: jarrodp@biolab.co.nz
Website: www.biolab.co.nz
circle number 27 on the reader reply card

NEW GENERATION CP-GAS CLEAN FILTERS



A.i. Scientific introduces Chrompack's new generation CP-Gas Clean Filters. These gas purification filters are ready for the future when high-speed chromatography will be increasingly important. The unbreakable housing is approved for pressures up to 15 bar. Thanks to a new metal foot design the filters are free from glue or adhesives, which makes them suitable for GC/MS applications. The CP-Gas Clean Filters contain the most sensitive indicators available, guaranteeing complete inertness of your system and reliable results. The new filters are installed on the Chrompack connecting unit without tools and within seconds. Connecting units are available for several numbers of filters, as well as a unique filter unit with pressure regulation. The CP-Gas Clean Filters are environmentally friendly as saturated filters can be returned for recycling.

Contact: Mark Albertson
A.i. Scientific (NZ) Ltd
P O Box 35579, Browns Bay, Auckland
Phone: (09) 4781351, Fax: (09) 4781360
Email: aiscinz@ihug.co.nz
circle number 28 on the reader reply card

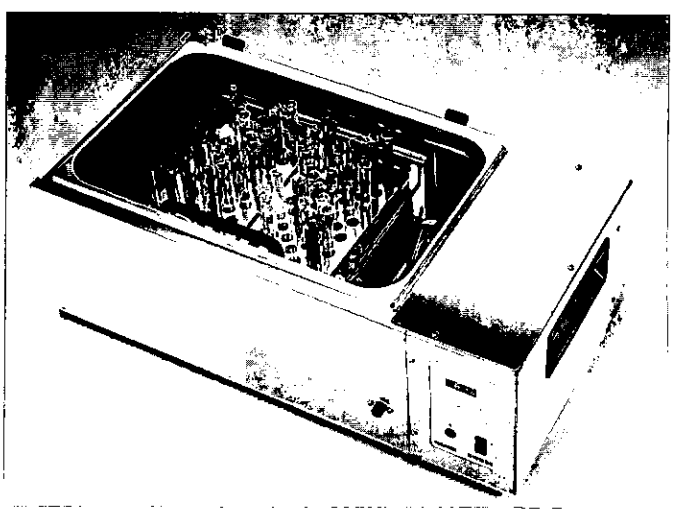
NOT JUST PRODUCTS, BUT SOLUTIONS... REDUCE UNWANTED PEAKS

Instrumental analysis is becoming more sophisticated and sensitive. Sample volumes are smaller, detection limits are being extended, and the number of samples being analysed is increasing. To meet these changing demands, background interferences must be removed in order to minimise unwanted peaks and improve signal-to-noise ratios. In addition, removing particles prior to analysis can increase column life, consequently reducing instrument down-time.

Biolab offers a variety of syringe filters to match the wide range of sample and instrument requirements of many industries. Select from our market leading suppliers, Millipore, Whatman and Lida. Need robotic compatibility, no problem...!!

Contact: Jarrod Percy or John Wickens
Biolab Scientific
Free Phone: 0800 933966 extn 785
Email: jarrodp@biolab.co.nz
Website: www.biolab.co.nz
circle number 29 on the reader reply card

HAAKE SHAKING WATER BATH SWB25 - SHAKEN, NOT STIRRED!



The Haake shaking water bath SWB25 features an especially high safety level for constant running and flexibility as well as very accurate temperature control (PID control). The setting and display of temperature and speed (shaking frequency) is carried out via a touch-sensitive keypad with a digital display.

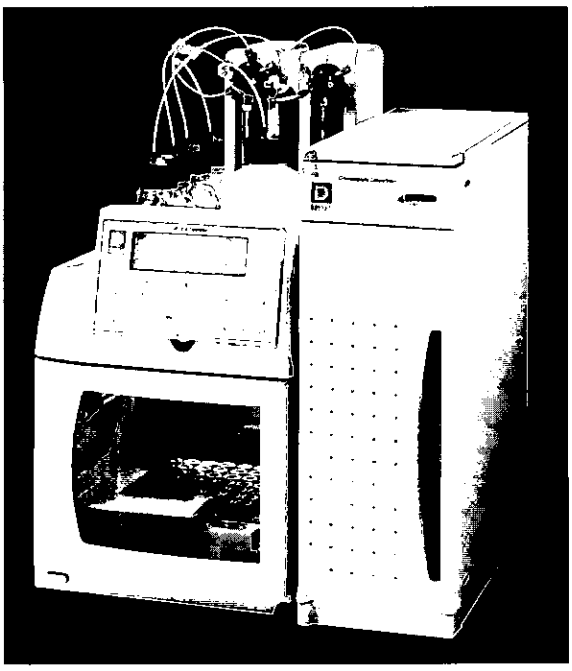
The bath is manufactured entirely from stainless steel (interior and exterior fittings). The heating unit and control sensor are located beneath the bath for easy cleaning.

The fluid level is variable from 50 mm to 180 mm and allows for an easy adaptation to sample vessels of differing heights.

A range of accessories e.g. test tube racks is available. A transparent plastic roof-shaped bath cover (optional) prevents water loss due to turbulence or evaporation. It is particularly recommended for temperatures above 70 °C.

Contact: John Small, Product Manager
Medic Watson Victor, Free Phone: 0800 508070
circle number 30 on the reader reply card

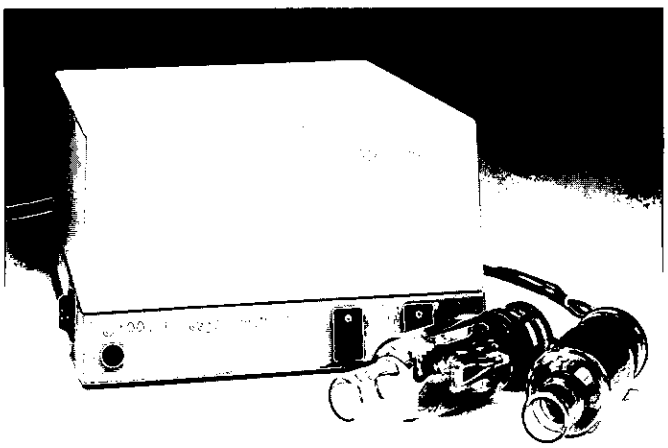
NEW AUTOSELECT AS50 AUTOSAMPLER FOR RELIABLE, REPRODUCIBLE AND ACCURATE ION CHROMATOGRAPHY RESULTS



A.i. Scientific has released Dionex's new AutoSelect AS50 IC autosampler made specifically for the application challenges of ion chromatography. Designed for reliability and increased sample throughput, the AS50 delivers high precision and low carryover to guarantee reliable results from every injection. The compact, PEEK-based AS50 has a syringe type injection mechanism offering injection volumes from 1 µL to 1.0 mL. The AS50 has easy-to-fill 10 mL sample vials and control through PeakNet software or from the front panel. Daily operation and routine maintenance is made simpler by easy access to the syringe drives and reagents. PeakNet controls the entire chromatography system from the autosampler to the detector, providing simple programming and allowing the status of each module to be checked while the schedule is in progress. The AS50 also offers automated sample preparation. With the Sample Prep option the AS50 can perform simple or serial dilutions, liquid-liquid extractions and reagent additions. AS50 optional configurations include the Thermal Compartment built to ensure the thermal stability of chromatographic components and the Chromatography Compartment designed to house and organise components. An optional Column Selection Valve allows automated switching between two independent applications on the same IC system. The Sample Prep option automates sample and standard preparation.

Contact: Mark Albertson
A.i. Scientific (NZ) Ltd
P O Box 35579, Browns Bay, Auckland
Phone: (09) 4781351, Fax: (09) 4781360
Email: aiscinz@ihug.co.nz
circle number 31 on the reader reply card

VARIAN INTRODUCES FOUR NEW HOLLOW-CATHODE AAS LAMPS



Varian has introduced four new UltrAA lamps for atomic absorption spectrometry. For use with Varian's high-performance SpectrAA line of atomic absorption spectrometers, the UltrAA lamps are high-intensity boosted discharge hollow cathode lamps. The new lamps are available in Ag/Cd/Pb/Zn, Au, Cu, and Si configurations and offer users longer life, increased sensitivity, and brighter emission.

The Varian Ag/Cd/Pb/Zn UltrAA lamp allows users to measure four commonly determined elements by purchasing only one long-life lamp. Ideal for many applications including environmental, clinical, and food determinations, the Ag/Cd/Pb/Zn lamp's sharper emission profile reduces self-absorption within the lamp and line broadening, which increases sensitivity. The Cu lamp is suitable for the food and mining industries and, like other Varian UltrAA lamps, has a typical lifetime of more than 5000 mA hours. The Au and Si lamps are appropriate for use in the mining and semiconductor industries, respectively.

Varian's UltrAA lamps use an existing lamp current and apply a second discharge within the lamp to increase the emission intensity. The boost current is supplied from the external control module and extends the boundaries of automated trace level metal determinations. This results in UltrAA lamps that are bright, sensitive, and will provide thousands of hours of reliable operation in typical usage. Varian guarantees its hollow-cathode AAS lamps for 5000 mA hours.

The UltrAA lamps are simple to install and can be mounted directly onto an adjustable base without external clips or flying leads attached to the lamps. Optional field upgrades are also available, ensuring compatibility with all of Varian's SpectrAA instruments.

Contact: Mark Albertson
A.i. Scientific (NZ) Ltd
P O Box 35579, Browns Bay, Auckland
Phone: (09) 4781351, Fax: (09) 4781360
Email: aiscinz@ihug.co.nz
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PERKIN-ELMER VIRTUAL LAB CD-ROM TOUR OFFERS INSIGHTS INTO ENVIRONMENTAL APPLICATIONS, TECHNOLOGIES AND SUPPORT

Perkin-Elmer's Virtual Lab Tour allows you to interactively experience the many technological and application solutions available for environmental and laboratory needs. The PE Virtual Lab Tour allows you to walk through applications from a variety of perspectives like water, soil/hazardous waste, air, or industrial hygiene. Users can directly access the technologies and explore the features and benefits of each technology. Complete with sound and graphics, the virtual lab tour covers environmental techniques ranging from inductively coupled plasma spectroscopy to portable gas chromatography.

Under each of the four application sections, such as "Water" for example, users can click on pop-up menus for a listing of typical applications such as semi-volatile organic compounds, pesticides, or trace metals. Each section ends with specific printable application notes. Information on organic and inorganic technologies is represented, using analytical capabilities, regulatory approvals, and evaluation criteria.

There is a worldwide PE service and support section, providing locations of global Perkin-Elmer offices for users.

To run the Perkin-Elmer Virtual Lab Tour, users must have at least a Microsoft Windows 95 or Windows NT operating environment, 120 MHz Pentium Processor, screen resolution of 600 x 800 or higher, 16-bit sound card and speakers, 16 MB of RAM, and 25 MB of free hard drive space.

To get your free copy of the Virtual Lab Tour, contact us quoting order number D-5679,

Contact: Peter Hall, Perkin-Elmer Pty Ltd
Free Phone: 0800 776767, Free Fax: 0800 776000
Email: perkin-elmer@clear.net.nz
Website: http://www.perkin-elmer.com
circle number 33 on the reader reply card

BENEFITS OF SYNTHESIS MONITORING SYSTEM SPOTLIGHTED IN NEW PERKIN-ELMER PRODUCT NOTE

The pharmaceutical industry's first and only stand-alone synthesis monitoring system for the drug discovery market is now highlighted in a new product note from Perkin-Elmer. The product note (Order No. D-5982) describes the Synthesis Monitoring System (SMS) analyser and it's many solutions for medical chemists and pharmaceutical laboratories, including the ability to provide spectra within seconds using fourier transform-infrared (FT-IR) based technology. Saving time and money, the SMS analyser verifies reaction sequence products before starting complex synthesis procedures.

The SMS product note focuses on the gains in productivity and operation made possible by the SMS analyser, it's time-saving "on-bead" analysis, simple rapid sampling techniques and the Reaction Sequence and Reaction Completion Monitoring. For medical chemists and pharmaceutical laboratories, the SMS analyser provides an efficient technique for fully exploiting the benefits of solid-phase synthesis in combinatorial chemistry.

Key benefits and features of the SMS analyser include the ability to rapidly and accurately monitor reaction products, without cleaving from resin beads. The analyser provides valuable information quickly using the special CombiPress accessory. A few reaction beads are placed in the CombiPress, compressed between diamond windows and high quality transmission spectra are obtained within seconds.

Contact: Peter Hall, Perkin-Elmer Pty Ltd
Free Phone: 0800 776767, Free Fax: 0800 776000
Email: perkin-elmer@clear.net.nz
Website: http://www.perkin-elmer.com
circle number 34 on the reader reply card

TRACE OXYHALIDES AND BROMATE IN DISINFECTED DRINKING WATER

A.i. Scientific has introduced Dionex's Ionpac AS9-HC (high capacity) column which offers a simplified anion-exchange method for the determination of trace oxyhalides and bromate as by-products in disinfected drinking water. The column allows the separation of bromate and chloride and allows quantification of bromate at concentrations as low as 1 ppb without sample pretreatment. Previous methods have required extensive pretreatment and analyte concentration prior to analysis.

Contact: Mark Albertson
A.i. Scientific (NZ) Ltd
P O Box 35579, Browns Bay, Auckland
Phone: (09) 4781351, Fax: (09) 4781360
Email: aiscinz@ihug.co.nz
circle number 35 on the reader reply card

NEW CP-PORABOND Q COLUMN IMPROVES RELIABILITY IN VOLATILE ANALYSIS

A.i. Scientific announces the release of Chrompack's new CP-PoraBOND Q column which combines the unique separation properties of PLOT columns with the stability of chemically bonded columns, thereby improving reliability of laboratory and on-line analysis of volatiles. CP-PoraBOND Q is an important step forward compared with standard porous polymer columns. Instead of coating particles on the inside of a capillary tube, a

new technology allows the porous polymer layer to be actually grown *in-situ*, inside the column. This means that instead of discrete particles the CP-PoraBOND Q contains a stable cross-linked layer which always maintains a high level of inertness and guarantees ultimate stability. The CP-PoraBOND Q is suitable for the analysis of impurities on solvents, residual solvents in pharmaceutical products and light hydrocarbon streams such as natural gas, ethylene/propylene streams and refinery gas. The improved stability of the porous polymer particle layer in the column ensures that these unique columns can be used for a wider range of demanding analyses including on-line process control and MS measurements.

Contact: Mark Albertson
A.i. Scientific (NZ) Ltd
P O Box 35579, Browns Bay, Auckland
Phone: (09) 4781351, Fax: (09) 4781360
Email: aiscinz@ihug.co.nz
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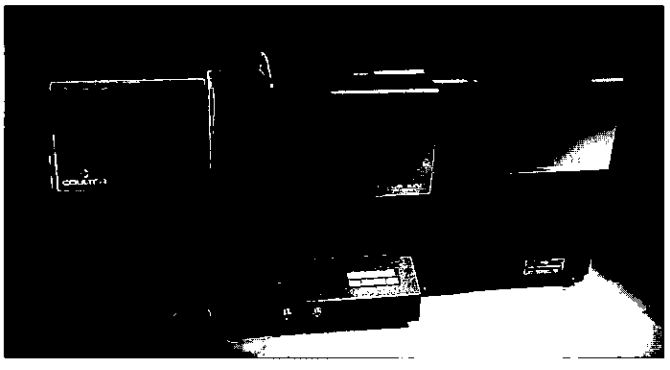
PARTICLE CHARACTERISATION FROM BECKMAN COULTER

Coulter Z Series - For Counting and Sizing of Cells and Particles
For over 30 years, Coulter has set the industry standard, worldwide, for accuracy, precision, reliability and consistency.

The Z Series utilises the Coulter Principle, the accepted reference method throughout the world, based on measurable changes in electrical resistance produced by particles suspended in an electrolyte.

Coulter Multisizer IIe - Delivers Accurate, High Resolution Analysis, Every Time
The most versatile particle size analyser available; whatever the industry - paint, abrasives, pharmaceuticals, or biological cell studies - you get the high resolution multichannel analysis and accuracy you demand - every time!



Coulter LS Series - The Very Best Tool for Characterising Particle Size Distribution from 40 nm to 2000 μm
With the above dynamic range available in a single measurement using an enhanced Light Scattering system, this versatile system allows measurement in dry or wet environments or in organic solvents.

What Else from Coulter?
- There's the Coulter Delsa Zeta Potential Analyser - easier to use with unparalleled accuracy for the designing of better quality products.
- Surface area and pore size measurement, with the Coulter SA3100 analyser.
- Fully automated, simple to use, particle counting with the new Coulter Z1 counter, enabling faster analysis and operation.

Contact: GBC Scientific (NZ)
P O Box 68-330, Newton, Auckland
Phone: (09) 3600928, Fax: (09) 3600683
Email: gbcaec@xtra.co.nz
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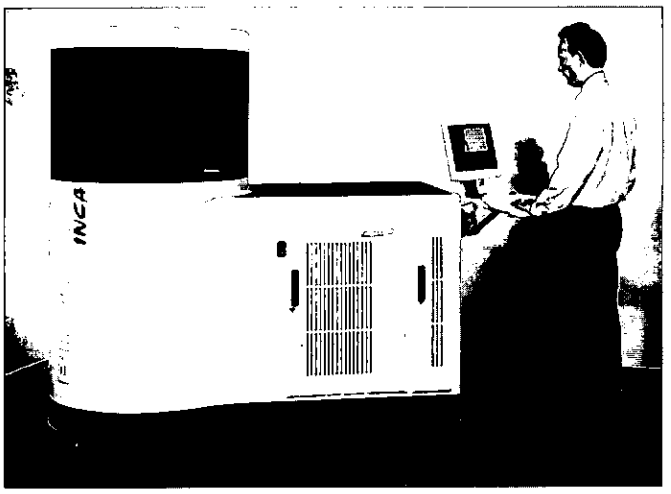
BRUKER NMR GOES PLUG-N-PLAY



Bruker's NMR business has announced an innovative integrated NMR chemical analysis system which represents a radical departure in design philosophy from traditional NMR spectrometers. The new system is called INCA™, for Integrated NMR Chemical Analyser. It represents a paradigm shift in NMR chemical analysis and paves the way for entirely new fields of application for automated high-performance NMR analysis.

Background
High-resolution sensitive Fourier Transform NMR with high-field superconducting magnets is a growing and tremendously powerful chemical analysis method due to its exceptional chemical specificity, structural information, and non-destructive, easy sample handling. But traditional NMR spectroscopy systems are essentially fixed installations requiring a significant footprint in a specifically laid-out NMR laboratory. The NMR laboratory necessarily is static, and requires tightly controlled environmental conditions, as well as appropriate limited-access planning.

NMR spectroscopists and trained operators have become used to operating in a limited access environment, under a safety plan. New NMR spectroscopists require specialised safety training due to magnetic stray fields, electronic cabling, and the modular nature of NMR spectrometers. A typical NMR spectrometer consists of a superconducting magnet, exchangeable NMR probes, electronics racks containing the RF and acquisition electronics, a workstation for the operating

computer and possibly an additional table for accessories (e.g. HPLC, printer, etc). Optional automated sample changers for NMR are separate stand-alone modules. Until now, NMR spectrometers were typically based on workstations running under the UNIX operating systems.

The INCA Innovation

INCA completely departs from the standard NMR paradigm, and takes an entirely different approach. It introduces the new design philosophy of an easy-to-use, fully integrated, movable, small footprint chemical analyser, based on high-field NMR. The goal of the INCA design is to allow NMR "to break out" of the traditional NMR laboratory, and to provide the power, specificity and easy-of-automation afforded by NMR chemical analysis to non-spectroscopists and to many new fields of applications. The INCA incorporates Bruker's pioneering UltraShield™ actively-shielded superconducting magnet technology with the superior Avance™ electronics and an industry-standard personal computer running under Windows NT in a single enclosure.

INCA does not require a traditional NMR spectroscopy laboratory, but can be installed in general chemistry laboratories, in at-line industrial process control or quality control applications, as well as in medical diagnostic laboratories performing *in vitro* NMR diagnostics.

The INCA, available at 300 and 400 MHz, reduces the footprint required for NMR to the dimensions of the INCA itself. The use of UltraShield magnets keeps the 5 Gauss line within the enclosure and alleviates safety concerns for operators not used to the safety aspects of an NMR laboratory. This enables INCA instruments to be placed outside conventional NMR laboratories and to be operated by non-NMR specialists. In addition, the INCA eliminates all external connections and cabling such as those between the console, the magnet, and optional external devices (e.g. HPLC) or automatic sample changers. The only connections left are a power cord, an air supply and an optional Ethernet line. NMR chemical analysis literally has become a "plug-and-play" technique.

New Perspectives in NMR Chemical Analysis

The innovative breakthrough achieved by the INCA system offers entirely surprising perspectives for NMR chemical analysis

Novel technologies and the integration of all components into a single enclosure reduce the footprint of the INCA by almost an order of magnitude compared to conventional NMR spectrometers. New NMR operators no longer need to be trained in limited-access aspects, perform probe exchanges or cable switching, or receive UNIX training.

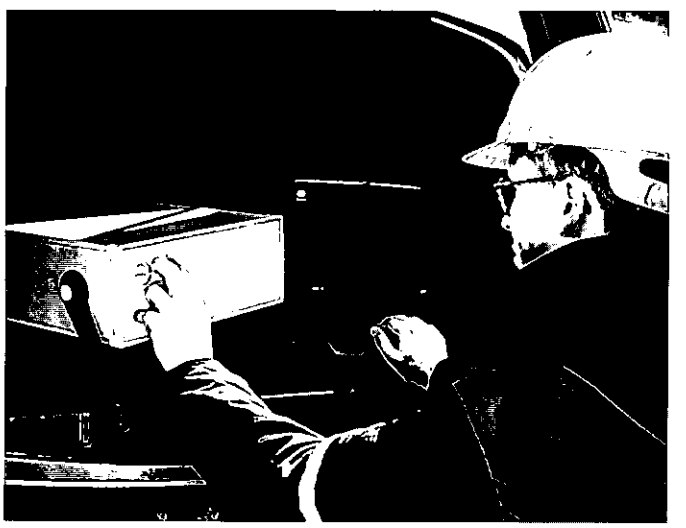
High-quality NMR data anywhere!

The INCA product line offers NMR chemical analysis for a much broader market of potential users. Complete systems integration, combined with industry-standard PCs running under the Windows NT operating system and a programmable, user-friendly interface, together provide a non-intimidating solution for applications in chemical analysis, at-line process control and *in vitro* diagnostics. INCA instruments can be configured to run just a single or a few dedicated methods in a highly automated fashion. These methods can be performed by a laboratory technician, a medical diagnostics technician, or an industrial QA/QC or production technician.

High-quality NMR data for anyone!

Contact: Science & Technology (NZ) Ltd
Phone: (03) 4777860 Fax: (03) 4777870
Email: scitech@scitech.co.nz
circle number 38 on the reader reply card

VARIAN INTRODUCES THE WORLD'S FASTEST MICRO GAS CHROMATOGRAPHS



Varian has added two faster micro gas chromatographs to its existing Micro GC product line. The new CP-2003 benchtop and CP-2003P portable Micro GCs incorporate unique advancements, resulting in 30 percent faster analysis times than competing instruments. The Micro GCs provide fast, reliable gas analysis for a wide variety of gas applications, including natural gas, BTU or calorific measurements, natural gas odorant measurements, permanent gases, stack gases, or other industrial emissions.

"Varian's new CP-2003 series of Micro GCs are equipped with the revolutionary Micro EGC (micro-electronic gas control) feature," said Vincent van Hese, International Marketing Manager for Varian's Micro GC products. "Varian is pleased to offer the CP-2002 and CP-2003 series worldwide, to enable our customers to capitalise on the growing fields of on-site, at-line, and on-line gas application markets."

Like the existing CP-2002 product line, Varian's CP-2003 Micro GCs are equipped with CP-Maitre Elite, a powerful PC-based software package, featuring new 32-bit software control and data-handling capabilities. Varian also has specialised software additions for customised applications, including natural gas physical properties, stream selection, special calculations for automated data, and custom user interfaces for optimal man-machine interface.

Chrompack International BV, a Varian subsidiary, developed these new additions to Varian's GC product line. Acquired by Varian in July 1998, Chrompack is a Netherlands-based manufacturer of chromatography instruments and consumables.

Contact: Mark Albertson
A.i. Scientific (NZ) Ltd
P O Box 35579, Browns Bay, Auckland
Phone: (09) 4781351, Fax: (09) 4781360
Email: aiscinz@ihug.co.nz
circle number 39 on the reader reply card

IT'S COMING ... PIPETTING WITH LIQUISYSTEMS BY METTLER TOLEDO - VOLUME RANGE FROM 0.1 µL TO 5000 µL

Mettler Toledo have taken a long hard look at conventional pipettes — and have adopted their best tried-and-tested components in the new Mettler Toledo pipette system.

VoluMate is based on proven technology, but Mettler Toledo have improved many of its elements without making compromises.

All components in Mettler Toledo LiquiSystems match one another perfectly. In addition to VoluMate single-channel pipettes and MultiMate multi-channel pipettes, the system offers a complete range of standard tips and filter tips, supplied in user-friendly, environmentally acceptable packaging.

A Firm Grip
And that with one hand. The volume setting dial is located away from the hand grip to avoid inadvertently changing the setting.

All Very Personal
Thanks to the protected identification window incorporated in the pipette.

Slim Line
Pipetting through thick and thin. Even in narrow containers such as centrifuge tubes this is child's play — without removing the ejector sleeve.

Work Single Handed
VoluMate and MultiMate sit ideally in the hand, thanks to their moulded grips and finger guards.

Contact: John Small, Product Manager
Medic Watson Victor, Free Phone: 0800 508070
circle number 40 on the reader reply card

UPDATED SATURN 2000 GC/MS AND GC/MS/MS FEATURED IN NEW BROCHURE

A.i. Scientific announces the release of a new brochure from Varian featuring the Saturn 2000 for benchtop Gas Chromatography/Mass Spectrometry and GC/MS/MS. Varian has taken sophisticated technology and simplified it into an application that provides for ease-of-use and broad user acceptance. Detailed screeen shots highlight the newest enhancements to the Saturn Software. The updated Windows protocol allows for flexible instrument control, provides an intuitive method builder and delivers easy data analysis. The Windows software can generate a wide array of quantitative and qualitative summaries to meet a diverse set of customer needs. Other Saturn 2000 GC/MS and GC/MS/MS features and benefits cited by Varian in the brochure are:

- Dependable chromatography and spectra guaranteed with electronic pneumatics control
- 1079 Universal Capillary Injector with 5 modes of operation: split, splitless, temperature ramp splitless, on-column and large volumes
- Sensitive benchtop MS in all modes of operation from EI full scan to CI-MS/MS
- Liquid CI option for 1 reagent and CI manifold for up to 3 gas or liquid reagents
- SilChrom inert electrodes to ensure sensitivity and ideal peak shape of polar analytes
- ChromatoProbe for a simple, inexpensive approach to the MS analysis of solids, liquids and slurries.

Contact: Mark Albertson
A.i. Scientific (NZ) Ltd
P O Box 35579, Browns Bay, Auckland
Phone: (09) 4781351, Fax: (09) 4781360
Email: aiscinz@ihug.co.nz
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NEW ZEALAND INSTITUTE OF CHEMISTRY

NZIC COUNCIL NEWS

COUNCIL 1999

President
Associate Professor George R Clark FNZIC
Chemistry Department, University of Auckland
Email: President@nzic.org.nz

1st Vice President
Professor Keith Hunter FNZIC
Department of Chemistry, University of Otago
Email: 1VP@nzic.org.nz

2nd Vice President
Professor Leon Phillips FNZIC
Department of Chemistry, University of Canterbury
Email: 2VP@nzic.org.nz

Honorary Treasurer
Dr Rob S Whitney FNZIC
Coal Research Association of New Zealand
Email: Treasurer@nzic.org.nz

Honorary General Secretary
Mr Grant Boston MNZIC
New Zealand Dairy Research Institute
Email: Secretary@nzic.org.nz

Council Delegates Appointed by Branches:

Auckland:	Dr Bruce W L Graham FNZIC
Waikato:	Dr Pat Holland MNZIC
Manawatu:	Professor Andrew Brodie FNZIC
Wellington:	Dr Rod Tilbury MNZIC
Canterbury:	Ms Rowena Holder MNZIC
Otago:	Professor Keith Hunter FNZIC

AUDIT REPORT

To the Members of New Zealand Institute of Chemistry (Inc.)

We have audited the financial report attached. The financial report provides information about the past financial performance of the Institute and its financial position as at 31 December 1997. This information is stated in accordance with the accounting policies attached.

Executive Council's Responsibilities

The executive council is responsible for the preparation of a financial report which gives a true and fair view of the financial position of the Institute as at 31 December 1997 and of the results of operations for the period ended on that date.

Auditor's Responsibilities

It is our responsibility to express an independent opinion of the financial report presented by the Board and report our opinion to you.

Basis of Opinion

An audit includes examining, on a test basis, evidence relevant to the amounts and disclosures in the financial report. It also includes assessing:

- the significant estimates and judgements made by the Executive in the preparation of the financial report, and
- whether the accounting policies are appropriate to the Institute's circumstances, consistently applied and adequately disclosed.

We conducted our audit in accordance with generally accepted auditing standards in New Zealand. We planned and performed our audit so as to obtain all the information and explanations we considered necessary. We obtained sufficient evidence to give reasonable assurance that the financial report is free from material misstatements, whether caused by fraud or error. In forming our opinion we also evaluated the overall adequacy of the presentation of information in the financial report. In common with other organisations of a similar nature, control over revenue prior to it being recorded is limited and there are no practical audit procedures to determine the effect of this limited control, and our audit opinion below is subject to this comment.

We provide accountancy service to the Institute. We have no other relationship with or interests in the Institute.

Unqualified Opinion

We have obtained all the information and explanations we have required.

In our opinion:

- proper accounting records have been kept by the Institute as far as appears from our examination of those records; and
- the financial report attached:
  - complies with generally accepted accounting practice;
  - gives a true and fair view of the financial position of the Institute as at 31 December 1997 and the result of its operation for the period ended on that date.

Our audit was completed on 11 December 1998 and our unqualified opinion is expressed as at the date.

Markhams Auckland
Chartered Accountants

New Zealand Institute of Chemistry (Inc.)
Statement of Financial Performance
For the Eight Months Ended 31st December 1997

		8 Months	12 Months
Revenue			
Subscriptions from Members		59,808	75,817
Chem NZ - RSC Subscriptions		—	12,070
Publication Sales		725	992
Conference Surplus		—	2,309
Chem 13 Exam Fees		4,619	3,258
IUPAC		—	30
Chem 13 News		450	30
Fees ANC Quiz		10,140	6,897
		75,742	101,403
Chemical Olympiad Donations	24,623		39,252
Chemical Olympiad Expenses	22,555		50,900
		2,068	(11,648)
Gross Revenue from Operation		77,810	89,755
Expenditure			
Accounting & Audit Fees	2,864		2,058
Accommodation Expenses	384		4,239
ANC Quiz Expenses	7,723		10,275
Branch Expenses - Capitation Fees	5,671		11,341
Branch Expenses - Student Travel	—		3,000
Chem NZ Expenses	8,505		5,035
Chem 13 Expenses	2,480		502
Conference Expenses	1,000		950
Donation	—		640
Depreciation	15		18
Goods & Services Tax	3,229		2,637
Interest & Bank Charges	593		527
Legal Costs	—		1,350
Journal - Publisher	6,484		10,033
Sundry Publications for Resale	109		2,795
Overseas Vistors Expenses	500		—
Printing & Stationary	6,518		5,731
Prizes	250		650
Rent to IPENZ	1,924		2,565
Secretarial Services	27,493		42,313
Subscriptions	562		2,175
Telephone & Fax Charges	568		1,439
Travelling Expenses	4,740		13,248
		81,612	123,521
		3,802	33,766
Other Income			
Interest - BNZ	1,380		4,116
Interest - Local Body Stock	—		(188)
Loss on Disposal of Investment	(500)		—
		880	3,928
Operating Deficit		2,922	29,838

New Zealand Institute of Chemistry (Inc.)
Statement of Financial Position
as at 31st December 1997

				30 April 1997
Capital Funds				
Chemical Olympiad Reserve			3,923	3,923
General Reserve			43,343	43,343
Balance at the Beginning of the Year			(13,876)	15,962
Plus Net Surplus (Deficit) for the Year			(2,922)	(29,838)
			30,468	33,390
Represented by:				
Current Assets				
Accounts Receivable		4,476		17,472
BNZ Current Account		—		3,889
BNZ Autocall Account		24,637		362
BNZ Term Deposits		16,727		16,152
			45,840	37,875
Fixed Assets				
Office Equipment	582			582
Less Accumulated Depreciation	523			508
		59		74
Presidential Chain		360		360
			419	434
Investments				
Equiticorp $21,000 Debenture		1		1
Lyttleton Harbour Board Stock 6.25% 1998		—		500
			1	501
Total Assets			46,260	38,810
Current Liabilities				
BNZ Current Account	8,069			
Accounts Payable	7,723			5,420
		15,792		5,420
Total Liabilities			15,792	5,420
Net Assets			30,468	33,390

The accompanying notes form part of these financial statements.

NEW ZEALAND INSTITUTE OF CHEMISTRY (INC.) NOTES TO THE FINANCIAL STATEMENTS FOR THE PERIOD ENDED 31ST DECEMBER 1997

1. STATEMENT OF ACCOUNTING POLICIES

REPORTING ENTITY

New Zealand Institute of Chemistry (Inc.) is a reporting entity registered under the Incorporated Societies Act 1908. The financial statements of the Institute have been prepared in accordance with generally accepted accounting practice and the Framework for Differential Reporting.

MEASUREMENT BASE

The accounting principles recognised as appropriate for the measurement and reporting of earnings and financial position on a historical cost basis are followed by the Institute.

SPECIFIC ACCOUNTING POLICIES

The following specific accounting policies which materially effect the measurement of financial performance and financial position have been applied:

- Accounts receivable are stated at their net realisable value after allowing for all bad debts.
- Fixed assets are stated at cost less aggregate depreciation. Depreciation has been calculated using the maximum rates permitted by the Income Tax Act 1994.
- Investments are valued at the lower of cost or net realisable value at balance date.
- The financial statements have been prepared on a GST inclusive basis. Accounts Payable and Accounts Receivable are stated inclusive of GST. All other assets and liabilities have been stated GST exclusive.
- Subscriptions are accounted for in the period they are receipted.
- The Institute qualifies for differential reporting as it is not publicly accountable and it is not large. Total revenue is less than $5 million, assets are less than $2.5 million and there are less than 20 employees. The entity has taken advantage of all available differential reporting exemptions.

CHANGING IN ACCOUNTING POLICIES

There have been no changes in accounting policies. All other policies have been applied on bases consistent with those used in previous years.

2. COMPARATIVES

- Balance date has been changed to 31 December of each year. Therefore this year's figures are for the eight months ended 31 December 1997.

3. CHEMICAL OLYMPIAD REPORTING

- Chemical Olympiad donations and expenses previously reported funding and expenses for the Physics and Mathematics Olympiads. These amounts have been excluded from the financial statements in the current period.

BRANCH NEWS

WAIKATO

The Waikato branch of the NZIC kicked off the year in grand style with two social functions. The first was a celebration of Don Llewellyn's knighthood, Don is a long standing member and past Vice-Chancellor of the University of Waikato. Don has been a staunch supporter of the NZIC and Waikato Branch in particular and it was a pleasure for members to meet to congratulate Don on the recognition of his wide contributions to the community. A pleasant lunchtime session was held at the University Staff club, The Station.

Good food and good company seems to be a successful theme, and this was continued with the Branch's second function of the year, the first committee meeting combined with a BBQ at the Ruakura Research Centre social club rooms. A good attendance including a pleasing number of interested students, enjoyed the elegant fare and a few choice ales. Most concern was with the lack of success of the Waikato Chiefs in the Super 12. One hopes for better things, soon.

International visitors included Professor David Nicholson from the University of Trondheim, Norway who spent part of his research leave at the Chemistry Department, University of Waikato. International departures include Trevor Mathison, who having completed his PhD with Brian Nicholson is leaving for Germany to take up a post-doctoral research fellowship with Professor Schmidbaur at the Technical University of Munich.

We are saddened to announce the upcoming "demise" of our Waikato Branch chairperson, Dr Bill Henderson. It seems Bill took Lindsay Main (past Chair of Chemistry) at his word when he said the departmental staff should endeavour to forge closer links with local chemistry teachers. Bill with his characteristic enthusiasm pursued this objective with great vigour and is marrying Angela Taylor, a chemistry teacher at Sacred Heart College in Hamilton in June. We wish them both all the best.

Upcoming activities include significant involvement of the NZIC members with the national Chem-Ed 99 Conference to be hosted at the University of Waikato this year. The conference theme is "Unravelling mysteries" and we are delighted to have secured a number of internationally famous chemists including Mary Virginia Orna. Orna is a leading figure in the American chemistry community and is presenting a public lecture on the Shroud of Turin in association with the ChemEd conference. Other planned activities include the now annual ChemQuest, a fun mastermind type competition for sixth formers, and the crystal growing competition as part of International Chemistry Week. We will also be running our highly popular and successful Analytical Chemistry Competition for seventh formers from the Waikato region.

Richard Coll

MANAWATU

Manawatu Branch AGM

The Manawatu Branch AGM was held in the Cafeteria, New Zealand Dairy Research Institute, on Wednesday 10 February 1999. At the AGM, attended by 15 members, Branch Chairman Grant Boston reviewed the 1998 year of scientific and social meetings (8 in total) and noted the continued success of the chemistry quiz for secondary schools in the Manawatu and Wellington Regions. The quiz attracted a number of entries from other parts of New Zealand and the 1998 event was a record one in terms of numbers of students (2071) and schools entered (63). It earned sufficient income to enable $1000 to be donated from the Quiz account to the Manawatu Chemical Education Trust.

The following Officers and Committee for 1999 were elected:
Chairman: Dr Stephen Van Eyk, New Zealand Pharmaceuticals Ltd
Secretary: Dr Richard Haverkamp, Institute of Technology and Engineering, Massey University
Treasurer: Dr Robert Norris, New Zealand Dairy Research Institute
Branch Editor: Dr Harry Percival, Landcare Research New Zealand Ltd
Council Delegate: Professor Andrew Brodie, Institute of Fundamental Sciences - Chemistry, Massey University

Committee: The following committee members were re-elected:
Mr Grant Boston, New Zealand Dairy Research Institute (Immediate Past-Chairman)
Mrs Kath Fletcher, Central Hawke's Bay College (Hawke's Bay representative)
Dr Mark Patchett, Institute of Molecular Biosciences, Massey University
Mr Laurence Scott, Contact Energy (Taranaki sub-branch representative)
Dr Tony Wright, Institute of Fundamental Sciences - Chemistry, Massey University

In addition two new committee members were elected:
Dr Justin Bendall, New Zealand Dairy Research Institute
Dr Jeremy Dombroski, HortResearch

Several 1998 Committee members did not stand again and the current committee acknowledges the work of these previous members, especially that of Gill Norris. Gill has been a stalwart of the committee for at least ten years, fulfilling various roles such as Chairperson (1993) and as a Council Delegate for many years. Gill's proudest achievement in the latter role was as a member of the NZIC Council Strategic Review Committee that was set up in late 1994 to examine the structure and activities of NZIC. That committee made recommendations which have now come to fruition with the new fee and membership structure for NZIC.

The AGM was followed by a light meal and then a talk "controlled strain rheology of spreads" from the outgoing Chairman Grant Boston. Grant described work at New Zealand Dairy Research Institute on the mechanical stress/strain (viscoelastic) properties of materials containing milkfats such as various kinds of butter. A constant strain rheometer was used to measure both the elastic modulus (representing solid-like behaviour) and the viscous modulus (representing liquid-like behaviour) and to measure the moduli at different temperatures. Various spreads were compared for their viscoelastic behaviour at a fixed temperature. The structure of the fats within the spreads is quite complex but it is hoped in the future to be able to relate this to the rheological properties.

Inorganic Chemistry Conference (IC '99)

Andrew Brodie of the Institute of Fundamental Sciences - Chemistry, Massey University, reports that Massey chemists had a high profile at the combined meeting of New Zealand and Australian inorganic chemists held at Victoria University of Wellington at the beginning of February. Around 270 inorganic chemists attended, mainly from New Zealand and Australia, but there were a number from other countries as well. Andrew Brodie (Co-Chair) and Tony Burrell were on the organising committee and responsible for the scientific programme, with some help from Massey colleagues. Papers were presented by Warwick Belcher, Tony Burrell, Wayne Campbell, Craig Dupree, Geoff Jameson, Steve Kennedy, Emad Khudaish, Al Nielson, Sonya Scott, Andrew Steedman, and Tony Wright. Eric Ainscough, Andrew Brodie, Ross Edwards, Simon Hall, David Officer, and Joyce Waters were also co-authors on some of the papers. Andrew adds that the plenary lectures were excellent and covered a wide range of inorganic chemistry from bioinorganic, to polymers, to organometallic, to solid state, to coordination chemistry.

Millenium Project

A Millenium project of some note was launched at a symposium on solar energy technology held at the University of Wollongong, Australia on 25 January 1999. This joint project between Massey and Wollongong Universities is called the Millenium Solar Project (MSP) and is the brain-child of Dr David Officer, Institute of Fundamental Sciences - Chemistry, Massey University, and Professor Gordon Wallace, Director of the Intelligent Polymer Research Institute at Wollongong University. A highlight of the MSP will be held at the Massey campus, Palmerston North on the dawn of 1 January, 2000. As the first rays of the sun appear over the horizon, advanced solar technology will be put into action, capturing the first rays of sunlight of the new millenium and creating a memorial of the event. The MSP will continue into 2000 with an exhibition of the latest solar technologies and symposia bringing together the best minds in solar research. Scholarships will also be offered for students working in solar energy. The MSP will promote the research being done by Dr David Officer and Professor Tony Burrell at Massey on arrays of porphyrin molecules to harvest light for energy purposes.

Awards To Members

Congratulations to Associate Professor Roger Reeves of the Institute of Fundamental Sciences - Chemistry, Massey University, who has been awarded a New Zealand Science and Technology Bronze Medal in recognition of research achievements in analytical chemistry, especially its application to problems in environmental chemistry and plant ecology, and for pioneering professional education of analytical chemists in New Zealand. Roger is regarded as one of the world's experts on metal-accumulating plants and inorganic bioremediation, and

is involved in various international collaborative research projects including the use of metal-accumulating plants for restoration of contaminated land.

Congratulations also to Professor Tony Burrell of the Institute of Fundamental Sciences - Chemistry, Massey University, for being awarded the 1998 Walter Burfitt prize, administered by the Royal Society of New South Wales. This prize is only awarded every three years to the worker in pure or applied science, resident in Australia or New Zealand, whose papers and other contributions published during the last six years are deemed of the highest scientific merit, account being taken only of investigations described for the first time and carried out by the author mainly in these countries.

Harry Percival

WELLINGTON

The Wellington Branch had its last meeting for 1998 at the Royal Society rooms with the NZIC visitor Dr Paul Anastas delivering his 'Green Chemistry' offering. This followed a different lecture with the same title given at Victoria University earlier in the day. It will be interesting to see how and when New Zealand begins to address such environmentally more friendly initiatives for laboratory and industrial processes.

The annual Branch Mellor Lecture was given in September 1998 by Dr David Officer (Massey University) on Artificial Photosynthesis - the connection with Mellor though somewhat tenuous came from the metalloporphyrins and their self-assembly to give large arrays.

The end of January saw Wellington hosting the joint NZIC/ RACI Inorganic meeting "IC '99" under the joint chairmanship of Professors John Spencer (Victoria University of Wellington) and Andrew Brodie (Massey). The conference entailed four full days of meeting plus the necessary recreational visits to venues of attraction close by (and the Martinborough wineries seemed even more popular).

As for the Wellington Branch, it has a committee largely unchanged from 1998 with its Chairman, Graham Murray, serving for his second year. The Secretary is Sue Freitag, Treasurer Alan Turner and committee members Andrew McFarlane (postgraduate representative), John Spencer, newcomer from Otago Victoria Stevens, and Rod Tilbury. A member from either IRL or ESR has yet to be appointed.

Needless to say, the NZIC event of the year will be the National Conference in Wellington from November 21-24, 1999. The organisation is in good hands with Jim Johnston (Victoria University of Wellington, Convener), Adrian Bennett (BRANZ), David Bibby (Industrial Research Ltd), Steve Bloor (Industrial Research Ltd), Richard Furneaux (Industrial Research Ltd) and John Spencer (Victoria University of Wellington) setting the programme and making all of the arrangements. While details will be published fully elsewhere I am led to believe that at least two distinguished overseas speakers have already signified their intention to attend. They are Professor Ron Breslow (1997 President, American Chemical Society and a distinguished organic chemist) and Professor Sir John Cadogan (Edinburgh and Imperial College, former Director of Research for BP and a senior science advisor to the British government). Professor Breslow has been exceptionally successful in promoting the science of chemistry to the populous at large and his book with this specific aim has been very well received. In comparison Professor Cadogan will be more familiar to many members of NZIC as he has been a conference plenary lecturer in the past and he also provided the first video-linked address to New Zealand. Some ten years ago he gave a lecture at the Royal Institution in London that was fed directly by satellite to our conference venue at Massey University - I remember it well as I had the privilege to chair the session.

Brian Halton

SPECIALIST GROUP NEWS

NZIC POLYMER GROUP NEWS

The O'Donnell Young Scientist Prize

This Prize is offered by the RACI Polymer Division in recognition of the longstanding support and encouragement of young polymer scientists by Professor James H O'Donnell of the University of Queensland. Professor James H O'Donnell's vision and efforts for polymer scientists in Australasia has young scientists in a pivotal role. This has resulted in many tangible benefits to young Australasian polymer scientists such as reduced conference registration fees, travel subsidies and prizes, and in a more general way has brought about their increased participation in the Division at all levels, and their increased profile in the national and international polymer community.

The prize is for a short attachment to another University to perform research towards the PhD. The minimum stay overseas is three weeks. Attendance at an overseas conference as part of the trip is encouraged.

This year's prize will consist of the lowest rate return airfare, plus an allowance of AUD$1500. In addition, there will be a frame citation. The recipient of the award is to be to a citizen of Australia or New Zealand (or holder of a permanent resident visa) who is a member of the RACI or NZIC and is enrolled for a PhD in Polymer Science or Technology at a tertiary institution in Australia or New Zealand and whose thesis will not have been handed in by 1 July of the year of taking up the award. The award is intended for students no further than 2.5 years into their PhD. The recipient, within three weeks of his/her return to Australia, is to submit a brief article to be published in the *Polymer Division News*; this article will also be offered to *Chemistry in Australia* and *Chemistry in New Zealand.*

SCIENCE FOR SUSTAINABILITY WORKSHOPS

You are invited to attend a Science for Sustainability workshop in your regional centre. The one-day workshops are free and open to anyone with an interest in maximising the benefits of sustainability. Four workshops will be held at the following locations:

Auckland
Auckland Regional Council Chambers, 26 April 1999

Hamilton
Quality Hotel, Te Rapa, 27 April 1999

Wellington
Terrace Conference Centre, Level 3
Dalmuir House, 114 The Terrace, 29 April 1999

Christchurch
Elizabeth Kelly Room, Arts Centre, 3 May 1999

For further information on the workshops please visit the MoRST website at http://www.morst.govt.nz

To assist with the organisation and catering of the workshops could you please register your interest by 8 April 1999 with:

Vikki Smithem, Adviser - Science Group
Ministry of Research, Science & Technology
P O Box 5336, Wellington
Phone: (04) 4716944, Fax: (04) 4711284
Email: vikki.smithem@morst.govt.nz

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This is a conference for all chemistry educators at primary, secondary and tertiary levels hosted by Waikato members of the New Zealand Association of Science Educators and the New Zealand Institute of Chemistry.

The conference will offer delegates the opportunity to hear about current developments in chemistry, both in New Zealand and overseas and to be introduced to contexts in which chemistry has an important role to play.

Keynote speakers include:

- **John Emsley** (Cambridge University Science Writer in Residence) "Communicating Science to the Public"
- **Mary Virginia Orna** (University of New Rochelle) "The Shroud of Turin and Other Mysteries "
- **David Katz** (Cabrina College) "The Chemistry of Toys"
- **Malcolm Carr** (University of Waikato) "Chemistry in Context - A Retrospective View"

A range of workshops and seminars are also offered, including sessions on special effects (the secrets behind Xena , Warrior Princess), Forensic Chemistry and Carbon Dating, plus the usual array of field trips, displays and social events.

For further information or to be put on the mailing list please contact:
Bev Cooper, c/- School of Education , University of Waikato , Private Bag 3105, Hamilton
Phone: (07) 8384382 , Fax: (07) 8384555, Email: bcooper@waikato.ac.nz

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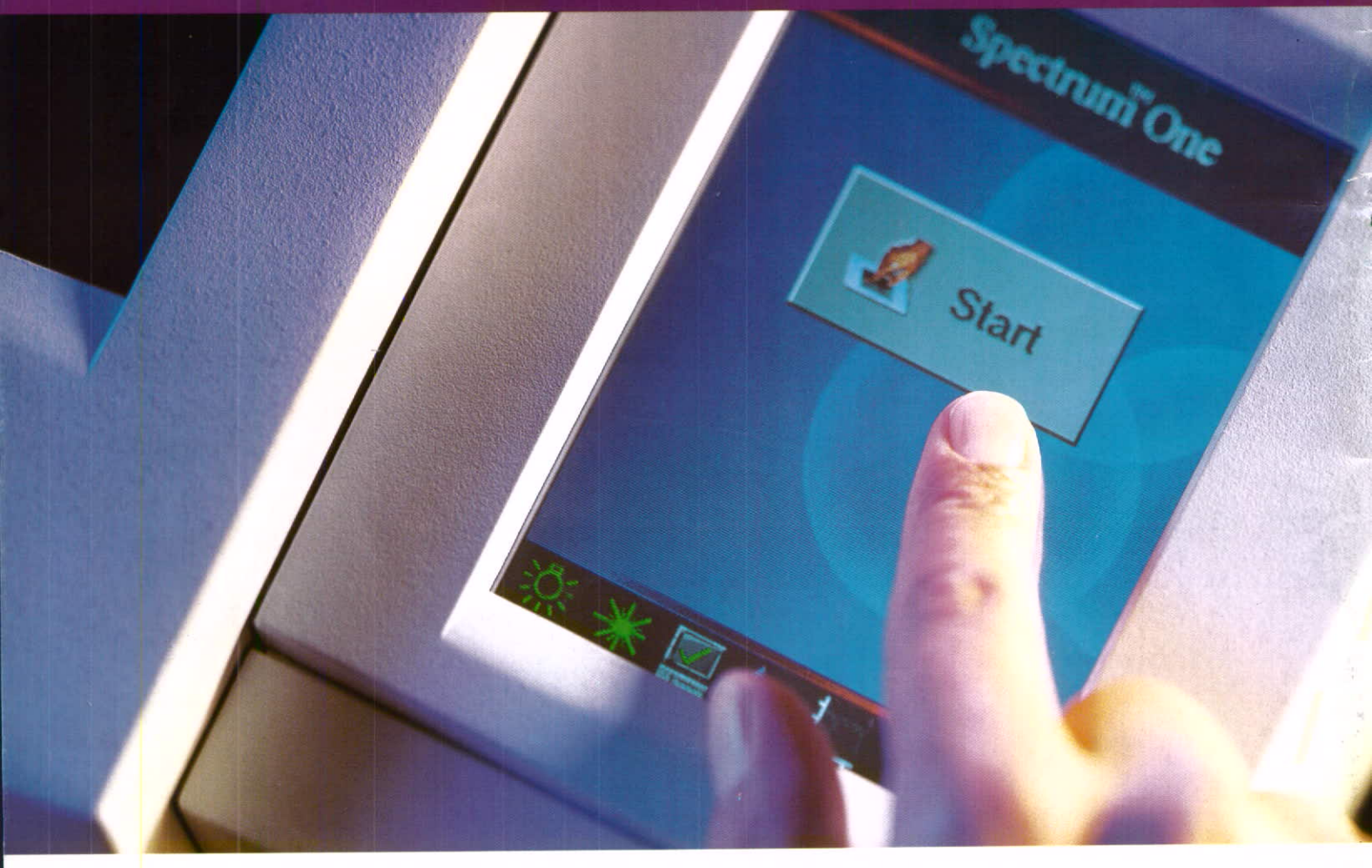

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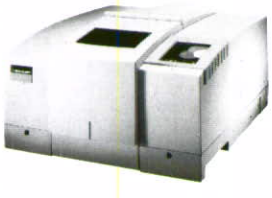

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