



The Society of Chemical Engineers New Zealand Incorporated
Newsletter No 125, April 2007

Notes from the Chair

Welcome to a somewhat belated April issue of the SCENZ Newsletter. As well as being chair, I am also the newsletter editor so I promise to be more up-to-date with next quarter's issue! I would like to thank those who contributed articles to this newsletter – particularly Professor John Chen of the University of Auckland – and encourage all readers to submit material for the next issue, whether news, notices of upcoming events, or whatever. Please send it to me by mid-June to get in the July issue.

Corresponding Board members

The present SCENZ Board is based in the Waikato and tries to include representative members from around the country in the board's activities as "corresponding members". While actually being on the Board, these members usually only physically attend meetings when it works in with their working circumstances but they do receive discussion documents, get the board agenda and minutes by e-mail and provide input either by e-mail or by participating in the Board meetings by teleconference if they are available. This is a good way to draw in additional points of view from around the country, beyond the narrow geographic scope covered by the Board.

Our list of corresponding members has tended to decline over recent years, so it is time to revive this representation. If you would like to nominate yourself as a corresponding member for your region, please get in touch with me. I would be keen to hear from you.

New members

I am very pleased to welcome the following new members to SCENZ:

- Mr Shivkumar Thammalla - Senior Process Engineer, BecaAMEC, Tauranga
- Mrs Haiam Abbas - PHD Student, LMRC, University of Auckland
- Miss Yashuang Song Gao - Research Engineer, LMRC, University of Auckland
- Toby Prader - Process Engineer, Process Developments Ltd, Lower Hutt
- Jonathan Suggate - Process Engineer, Process Developments Ltd, Lower Hutt

I would also like to welcome the 80 odd, *newly found* members of IChemE who may be receiving this newsletter for the first time. Unfortunately, we had hitherto not known about them as they had been paying their subscriptions direct to the UK, so we had not included them in our communications. As well as being a stand-alone society, SCENZ also represents IChemE in New Zealand, so IChemE members based here are automatically members of SCENZ, at no extra charge. Thanks to Executive Secretary Tony Harcourt for finding these lost members and bringing them onto our list.

Upcoming events

I am aware of two important upcoming SCENZ events. The annual Waikato joint meeting of APPITA, SCENZ and the IPENZ Waikato/BoP Branch is in Hamilton on 24 May and Chemeca 2007 is in Melbourne from 23 September. Notices for both events are included later in this newsletter.

Congratulations

Finally, I would like to congratulate Russell Burton, who received the IPENZ Skellerup Award in late March. Russell is a past Chair of SCENZ and has made many other important contributions to our profession. See the article later in this issue.

Simon Lovatt

simon.lovatt@agresearch.co.nz

Overdue Subscriptions!

Last years subscription notices for both SCENZ and NZ resident IChemE members were sent out later than usual. There has been a consequent poor payment response from both groups, with many SCENZ and NZ resident IChemE subscriptions still outstanding! It is important to SCENZ and in most cases of benefit to members, to pay their dues through the SCENZ secretariat. Individual reminder notices will shortly be sent out to those members who are in arrears.

Note that any members whose subs have not been paid since 2004 will be removed from our membership lists. If you are in doubt about your own situation, please contact Tony, scenz@canterbury.ac.nz

APPITA/SCENZ/IPENZ meeting – 24 May

This annual joint meeting of APPITA, SCENZ and the IPENZ Waikato/BoP Branch will be held in Hamilton this year. As usual, the format will be drinks followed by dinner, followed by lectures by three interesting and varied speakers. The programme for the evening will be:

Associate Professor Earl Bardsley, Dept Earth & Ocean Sciences, University of Waikato: **“A pumped storage scheme for NZ to maintaining hydro electricity against climatic variations”**

Jenny Jago, Dexcel: **“Automating on-farm milk harvesting for the dairy industry”**

Associate Professor David I. Wilson, School of Engineering, AUT University, Formerly of Karlstad University, Sweden: **“Modelling and control of a multi-ply paper board machine”**

Location: University of Waikato, drinks 6:30-7pm, dinner 7-8pm at The Station cafe, followed by lectures in an adjacent lecture room.

Chemeca 2007, Sofitel Melbourne, 23-26 September

Chemeca 2007 will bring together people from throughout our region and beyond for the purpose of sharing experiences in the discovery, development and application of technology for the process industries. The theme of the conference (“Academia and Industry - Strengthening the Profession”) has been chosen to highlight the role of our profession in generating the benefits that academia and industry deliver for the community at large.

More information can be found at the conference web site: <http://www.chemeca2007.com/>.

Key dates:

Paper submission deadline	Wednesday, 9 May 2007
Notification of review outcome & schedule notification	Friday, 15 June 2007
Early registration deadline	Friday, 29 June 2007

Capturing the Imagination of Future Chemical Engineers

Take a look at any recent IChemE or IPENZ magazine, or even a local newspaper and you will see articles about widespread skilled labour shortages. Chemical engineers, like many professionals, are in short supply and industry demand is increasing. The solution is obvious – increase the number of graduates entering the work force. The challenge (both here and overseas) is to raise the profile of chemical engineering in high schools, capture the interest of students, and ensure sufficient numbers choose to study Chemical Engineering when they reach university. Over the past few months the SCENZ Board has been looking ways it can assist with this. In February it was decided to work with Futureintech, and jointly develop a Chemical Engineering careers brochure. Futureintech (www.futureintech.org.nz) is a government funded program, run by IPENZ, which aims to increase the number of high school students choosing technology-based careers in New Zealand.

SCENZ is providing input on general brochure design, and supplying the written material for the publication including:

- descriptions of what chemical engineering actually is
- information on possible careers and career paths
- a short list of NZ industries where chemical engineers play key roles
- examples of how chemical engineers can contribute to solving the future challenges we face globally
- relevant web sites to consult for further careers information (including links to the Chemical Engineering departments at New Zealand universities)

Copy writers and graphic designers at Futureintech will ensure the final product is professional and pitched appropriately for the target audience. Futureintech work closely with schools careers councillors, and also run a nationwide careers expo program annually. When the brochure is completed soon it will be distributed via these channels.

The project is jointly funded by SCENZ and Futureintech, with both groups paying half of the brochure development costs. Futureintech is covering printing costs. Since committing to the project the SCENZ board has managed to secure some industry funding to help reduce our outlay.

Raising the profile of chemical engineering is an ongoing challenge, and something we must all try to address. IPENZ runs an excellent program ‘Get Alongside a Careers Advisor’, where practising engineers act as a local source of information for school careers advisors. This is something we can all support, and I urge you to consider donating a few hours of your time to support this program in your local area. For more information on this initiative visit http://www.ipenz.org.nz/ipenz/Education_Career/careers-advisor.cfm.

Tristan Hunter, MIChemE

Principal Process Control Engineer, Automation & Process Control Group, Fonterra. Email: tristan.hunter@fonterra.com

News from The University of Waikato

Student engineers are winners

Engineering students at Waikato University have won a number of prizes for their work recently. Callum Trapski, Greg van Eyk, Rick Fourie and Samuel Rogers have won the 2006 Engineering Design Project, awarded by the Waikato-Bay of Plenty branch of the Institution of Professional Engineers of New Zealand (IPENZ). The team shared the \$1500 prize for their design for a plant to process bovine foetal serum.

Two other students from the school have received individual awards. Karl Jamieson, a final year student in Materials and Process Engineering (MAPE) was awarded the SCENZ prize for being the top student in the 3rd year of the MAPE programme at the University of Waikato in 2006. The Society of Materials New Zealand Inc. (SMNZI) awarded a prize to Shane Huisman, for being the top student in materials engineering. Shane completed his Bachelor of Engineering in Mechanical Engineering in 2006.

James Carson

University of Waikato
j.carson@waikato.ac.nz

News from the University of Auckland

(Compiled by John Chen with assistance from others)

New Charitable Trust to Benefit Engineering Students (from *IPENZ Engineering Dimension*, October 2006, Issue 53)

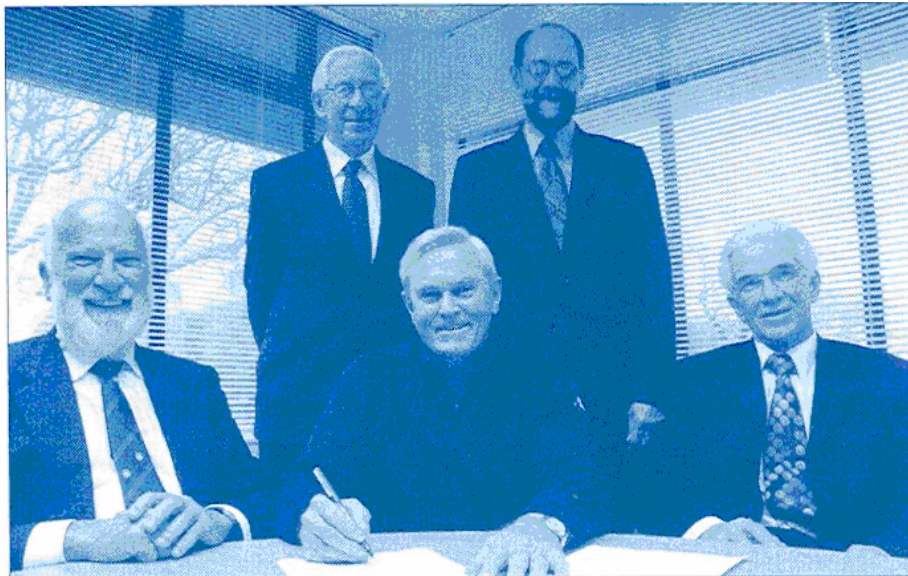
A new charitable trust has been set up by the Auckland University Engineers Association (AUEA) to provide scholarships for talented or needy students and contribute to research that will benefit industry.

The AUEA is independent of the University of Auckland and all graduates of the School of Engineering are members. Three prominent engineering alumni are backing the fund as Trustees: Sir Ron Carter Dist.FIPENZ (joint founder and former Chief Executive of Beca Group), Bruce Goodfellow (Director of the Sanford, Nufarm and Sulkem Groups and Refrigeration Engineering Co Ltd) and IPENZ Past President Ian Parton Dist.FIPENZ (Watercare director and VT Fitzroy Chair).

Sir Ron Carter says that the fund should become a nucleus around which graduates can come together and add value to the School of Engineering. "This is a way for alumni themselves to recognise outstanding potential and assist those who will benefit from support through an undergraduate degree", Sir Ron says.

Ian Parton says he hopes the fund will help the School maintain its competitive edge. "It is getting harder for students to fund their way through university and we see some deserving cases who would benefit from additional support."

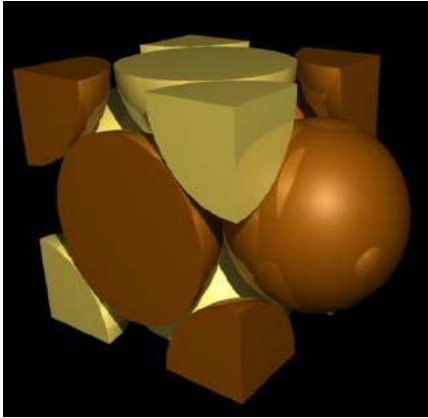
The AUEA will be progressively contacting the more than 7000 graduates of the School of Engineering seeking donations.



(Sir Ron Carter (centre) signs on the dotted line, joined by (left to right) AUEA President Des Mataga, AUEA Secretary Alan Routley, Trustee Bruce Goodfellow and Trustee Ian Parton. Bruce Goodfellow is a Chemical & Materials alumnus, BE 1973, PhD 1980.)

Underlying processes revealed (from *Academix Issue 1, Feb 2007 – Magazine of the Centre for Academic Development, The University of Auckland*)

Dr Bryony James, Chemical & Materials Engineering, teaches on a core stage one paper with large enrolments - 550 and growing. At these numbers, practical laboratories and tutorials become unwieldy. From 2004 to 2006, Bryony developed two electronic resources with staff from CAD covering topics students often have difficulty understanding. The resources interactively demonstrate the relationship between micro-structural changes and mechanical processes to provide students with insight into underlying processes. The students receive a CD at the beginning of the year and can use it either in a computer lab or at home.

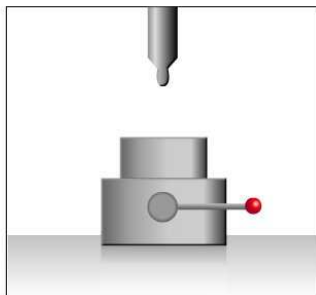
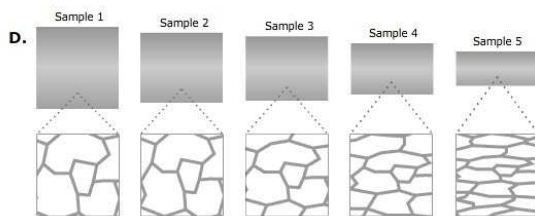


A Teaching Improvement Grant funded the first resource on phase diagrams. Students can often memorise how to use the diagrams without really understanding the underlying concepts and why the results are so important. Being able to see the microstructural changes that occur as temperature and composition are altered helps students get a much deeper understanding of what a phase diagram means.

The grant paid for animations of the changes that occur in microstructure and atomic structure as composition or temperature changes. Mike Hurst used Macromedia Director to develop interactive phase diagrams and combine them with text, equations and animations. The student can move a slider over a diagram, and watch the animation and equation change either gradually or at pivotal moments. MCQ tests send students back to the relevant section if they answer incorrectly. Student feedback was excellent, especially on the format of the tests.

<< back

next page >>



	Hardness
Test 1.	
Test 2.	
Test 3.	
Test 4.	
Average hardness	

Bryony and CAD staff went on to develop a 'prequel' looking at processes relating to deformation, recrystallisation and diffusion. This also uses a combination of graphics, text and interactive animations and a video of metal casting. Liz Ramsay helped with planning and coordinating both projects. Craig Housley developed most of the animations, the Flash website, and the virtual laboratories where students carry out processes at the computer, record the results and plot them on graphs. At the end of each 'lab' students can check their graph against a model answer and get help in the form of explanation followed by directions back to the appropriate part of the site. Reflective questions and a pop-up glossary are also included. Multi-choice revision questions at the end follow the same format as the earlier resource. Once again student feedback was very positive. The video, in particular, prompted many requests for further resources of a similar nature. A typical student comment for these resources was: "I liked how the animations link with the explanations – makes concepts easier to visualize and understand". A virtual lab can be seen at: www.cad.auckland.ac.nz/index.php?p=elearning_gallery.

Update on Graduates

Nicola Jackson, C&M 1997

Nicola is now Business Leader for the Biosensors and Biomeasurement team at HortResearch. HortResearch is a commercial research organization specialising in fruit, food, nutrition and human performance. Nicola's team identifies market opportunities to commercialise their intellectual property, negotiate agreements with collaborators and define their commercial strategy.

Rick Smith, C&M 1983, PhD 1989

Rick is now Engineering Manager, ITT Corporation – Advanced Water Treatment, Wedeco Ltd, Auckland, supplier of drinking, process and waste water treatment systems and equipment comprising screening & filtration, biological, dosing and disinfection (UV and ozone).

Rick was previously Senior Process Engineer, SKM Ltd., 2000-2004. Seconded to Philippine Geothermal Inc., Unocal as Senior Advising Production Engineer, Process Engineer, Kingston Morrison Ltd., 1994-2000. Predominantly site-based on Philippine National Oil Company's Leyte 650MW geothermal expansion and Indonesia's Wayang Windu 110MW geothermal projects, Process Engineer, KRTA Ltd., 1992-1994, and Post-Doctoral Fellow, Pulp & Paper Centre, University of British Columbia, 1990-1992.

Colleen Bettles (Olsen) C&M 1977

Colleen completed a PhD at RMIT. She is now Senior Research Fellow, Centre of Excellence for Design in Light Metals, Monash University. Previously, she was Principal Research Scientist CSIRO, Chief Chemist Nylex (NZ) Ltd, Technical Manager Crown Lynn Technical Ceramics. Colleen tells me that when she first joined CSIRO, her letter of offer of appointment was signed by Colin Adams.

Amelia Rentzios, C&M 2006

Amelia is Product Development Engineer, L'Oreal USA, Corporate Office, New York, NY - in Manhattan, on 5th Avenue! She is involved in project management of new product launches, translating marketing briefs/ideas into an engineering project involving R&D, Manufacturing, Logistics and Purchasing, liaison between marketing and manufacturing, and packaging development.

Amelia says: "I found that having a Chemical ***and*** Materials degree gave me an edge against other job applicants in the USA (who were either chemical or materials engineers) as the degree develops the knowledge and understanding of research techniques, material properties as well as their processing, engineering design and project management."

Oliver Scholes, C&M, 2000

Oliver did his PhD at Monash (2001-2005) on "Mechanical Thermal Expression of Lignite: Directional Dewatering and Permeability Characteristics". From 2005-2006, he was Water Management Specialist for GE Infrastructure managing Cooling water and boiler systems at oil refineries and chemical plants. He is now Research Associate for BHPBilliton at their Newcastle Technology Centre conducting fundamental research related to coke-making and steel-making.

Suzanne Hay, C&M 1999, PhD 2004

Suzanne is Chemical Engineer, Beca AMEC Limited, Auckland. Beca AMEC is an engineering consultancy specialising in the Pulp and Paper and Metals and Mining industries. After working for various clients in different industries, Suzanne has recently spent several years based out at NZ Steel, as part of an engineering team completing a Feasibility study within the Steel Slab Making Plant.

Alex Turnbull, C&M 1990

Alex is Director-Supply Partnerships, Fonterra Co-operative Groups Ltd. Alex's present role involves managing every aspect of Fonterra's relationship with one of the world's largest food companies. He has worked throughout South America in a variety of roles, including seven years as General Manager of Fonterra Brazil, and visited countries such as Panama, Colombia, Argentina and Chile.

Jenny Purdie, C&M 1986, PhD 1993

Jenny became the first female Smelter Operations Manager within Alcoa World Alumina's operations in Australia in 2005 – managing the Pt Henry smelter in Geelong, Victoria which produces 185,000 tonnes of aluminium each year.

Jenny was appointed to the role at Alcoa Point Henry from her position as Electrode Manager at the Alcoa-operated Portland Aluminium Smelter after 15 years experience in the aluminium industry with Alcoa and Comalco in various research, technical and production roles.

Jenny also has an Executive MBA from the Mt Eliza Business School in Melbourne. She is married to Martin, and has a daughter.

Farah Hassan, C&M 2001

Farah has shifted to Nufarm head office in Melbourne and joined the engineering team. Her role involves project engineering & management.

Ravinesh Kumar C&M 1994

Ravi is now Maintenance & Reliability, Works Planning Team Leader at Altona Refinery.

Wayne Plummer C&M 1992

Since leaving Waste Management, Wayne has started a company called Spill Control Systems NZ Ltd., (www.spillcontrolsystems.co.nz) specializing in the provision of spill control equipment and related services.

Niloshree Halder (Mukherjee) C&M 2002

Niloshree is now in Brisbane working in the water and waste water industry for a company called Aquatec Maxcon.

Kevin Chang C&M 2005

Kevin is a Process Engineer at Nufarm Health & Science, involved in making animal pharmaceutical and other products.

Paul Ma C&M 1996

Paul has a PhD from Cornell. He is now Metal ALD Technology Manager, Applied Materials in Santa Clara, California. ALD = Atomic Layer Deposition. Applied Materials is the largest supplier of manufacturing systems and related services to the global semiconductor industry.



C&M Staff and final year students 2006

Rotorua Chemical Engineer Wins Prestigious Award

Rotorua chemical engineer Russell Burton, from Crown Research Institute Scion, has been recognised for his contribution to advancing chemical engineering knowledge in New Zealand, and service to the bioprocessing industries.

Dr Burton, now a group manager at Scion, has been awarded the Skellerup Award from the Institution of Professional Engineers New Zealand (IPENZ) for his services to chemical engineering and to the wood processing industry.

"I was stunned to find out I was even a finalist in the awards, and had no idea I'd even be nominated. To then hear I had won was a real surprise," he says.

Dr Burton says the chemical engineering industry in New Zealand is small but has an important role in the country's economy.

"Our profile is continuing to grow internationally because of the work that is being done by the small number of chemical engineers we have. The work we do is quite different because our focus is mainly on adding value to the dairy and pulp and paper industries – internationally the focus tends to be on petrochemicals."

Dr Burton, who is originally from Christchurch, graduated with a Bachelor of Chemical Engineering from the University of Canterbury in 1977. He moved to Rotorua a year later to join what was then the Forestry Research Institute – now Scion.

"I've worked in Rotorua since then, except for a few years away to study for my PhD in the United Kingdom," he says.

Scientific advancements that Dr Burton has been involved in at Scion include the design and operation of a wood to ethanol operation, and leading the commercialisation of a number of technologies.

Dr Burton's role at Scion now focuses on growing investment in science and finding ways that the Scion team can help improve the profitability and viability of New Zealand's forestry industry.

"It's been an exciting journey at Scion. The forestry sector is a great area to work in because the industry has such potential. I now work more in a managerial role – but I still enjoy the challenge of what the researchers here are up to," Dr Burton says.

While at Scion Dr Burton has held a number of external positions, including the Chair of the Society of Chemical Engineers New Zealand, the first New Zealander to Chair the Federation of Chemical Engineers Australasia, the Establishment Director of the World Council of Chemical Engineers and the first New Zealander to be president of the Asia-Pacific Congress of Chemical Engineers.

Scion Chief Executive Officer Dr Tom Richardson says Dr Burton has made a huge contribution to the chemical engineering field and to the industry in New Zealand – both in his research role and now in growing investment into research and development.

"Russell has helped to build international respect for the leading research taking place in New Zealand, and for bringing together government and industry to develop a number of substantial research programmes."

(See: <http://www.scoop.co.nz/stories/print.html?path=SC0703/S00064.htm>)

Capital Cost Estimator for Process Plant in New Zealand

S B Jesen & W B Earl

Utilising the data contained in "Process Capital Cost Estimation for New Zealand 2004", this programme runs in EXCEL versions from 1998 to 2005 with VBA. enabled. Macro security should be set to medium.

Background

The cost estimator is designed for chemical and process engineers and facilitates "study accuracy" capital cost estimations to be performed based on New Zealand derived cost data. Cost data tables for common pieces of process equipment and capital cost estimation methodologies relevant to New Zealand industry are provided.

The capital cost estimation data was collected from New Zealand equipment suppliers, consultancy firms and end users over the period January 2004 to March 2005.

Suppliers of information have not been listed, since many provided data only on the basis that they were not named. Since 1994, the growth of the "global market" has seen the quantity of process equipment imported into New Zealand increase significantly. Overseas cost data therefore provides a valid representation of the costs associated with many types of process equipment used in New Zealand and this includes a significant amount of cost data from an American publication, Ulrich (2004). This data has been used with permission of John Wiley & Sons Inc.

CDROM of this programme

Now available from:

SCENZ Inc.
P O Box 28 139
Beckenham
Christchurch 8242
New Zealand
SCENZ@canterbury.ac.nz

Cost: \$100.00 per copy, plus \$5.00 p & p

Total Cost: \$105.00

(note: SCENZ is not GST registered)

How to Pay: (Please Indicate)

I enclose cheque for \$105.00

Paying by Credit Card: (Visa & Mastercard only)

Name: (as it appears on card) _____

Card No:

Expiry Date:

Paying by EFT: Please deposit funds into the SCENZ Bank Account No: 060193 0244465 00 quoting your name as reference and fax or mail this order to the Executive Secretary.

Receipt Required

Mailing Address: _____





The Society of Chemical Engineers New Zealand Incorporated

Affiliated to The Institution of Professional Engineers New Zealand & The Institution of Chemical Engineers United Kingdom

APPLICATION FOR MEMBERSHIP

Membership is open to Professional Engineers, Scientists, and the others interested in Chemical Engineering

Title: (e.g. Dr, Mrs, Mr, Miss, Ms): _____ Family Name: _____

Initials: _____ Preferred Given Name: _____

Postal Address: _____

Business Address: _____

Telephone No. Business: _____ Private: _____

Fax No: _____ E-mail: _____

Academic Qualifications: (please include the awarding University/College and years): _____

Financial Member IPENZ: _____ No/Class of Membership: _____

Financial Member IChemE: _____ No/Class of Membership: _____

Membership of other Professional Bodies: (please indicate) _____

JOB DESCRIPTION: A brief description of your job and the nature of the organisation to which you belong

DECLARATION

I believe myself to be a proper person to be elected a member of the Society Chemical Engineers New Zealand and do hereby promise that, in the event of my election, I will be governed by the Rules of the Society for the time being in force, or as they may be amended, and that I will promote the objects of the Society as far as may be in my power.

Signed: _____ Date _____

How to Pay*

Please invoice me I enclose cheque for \$30 Receipt Required

Paying by Credit Card: (Visa & Mastercard Only) Name: (as it appears on card) _____

Card No. _____ Expiry Date: _____

Paying by EFT: Please deposit funds into National Bank of New Zealand Account No: 060193 0244465 00 quoting your name as reference and fax/mail your application to the Executive Secretary.

* Note that SCENZ membership is automatic and free to all financial members of IChemE.

Please send information on IChemE Membership Class: Affiliate Associate Member Fellow

For Office Use

Received by SCENZ Secretary _____ Acknowledgement Sent: _____

Approval of SCENZ Board _____

Notification sent _____ Database _____ Email _____

IChemE Information Request: _____ IChemE Application _____

Please send to: The Executive Secretary, SCENZ, P.O. Box 28139, Beckenham, Christchurch 8242, New Zealand Telephone: +64 03 942 1902, Fax: +64 03 942 1999, Email: scenz@canterbury.ac.nz