



In the Pursuit of Excellence

THE SCIENCE FOUNDATION FOR PHYSICS
within the University of Sydney

**2003 PROFESSOR HARRY MESSEL
INTERNATIONAL SCIENCE SCHOOL**

FROM **ZERO** TO **Infinity**

7 – 19 July 2003

School of Physics
The University of Sydney NSW 2006
AUSTRALIA

List of Supporters

The Science Foundation for Physics is dependent on its supporters to provide the necessary funds for the International Science Schools. The Foundation is most grateful to the following people and institutions for their generosity and support of the 2003 Professor Harry Messel International Science School.

The Messel Endowment (see below)
Mrs Elizabeth Boden
The Lamble Foundation
Westpac Banking Corporation
IBM Asia Pacific—supporting the Chinese scholars
The NSW Department of Education and Training — supporting NSW scholars
The University of Sydney International Development Fund — contributing to the visit by the Thai and Malaysian scholars
The College of Sciences and Technology, The University of Sydney — supporting NSW scholars
Faculty of Science, The University of Sydney
Scientific Services P/L

The following institutions assisted in the selection and travel of the overseas students:

The Affiliated Middle School of Beijing University, China
Ministry of Education, Culture, Sports, Science and Technology, Japan
Ministry of Education Malaysia
The Royal Society of New Zealand
Ministry of Education, Singapore
Ministry of Education, Thailand
The Association for Science Education, UK
The Royal Institution of Great Britain
NESTA (The National Endowment for Science, Technology and the Arts)
Department of Energy, USA

Webcasting was made possible by generous gifts from:

Professor Harry Messel
James N. Kirby Foundation
Nell & Hermon Slade Trust
Hermon Slade Raiatea Foundation
IBM Asia Pacific
Dr Peter D. Jones

The Messel Endowment

In 1999 the Science Foundation for Physics within the University of Sydney established the Messel Endowment to honour Professor Harry Messel and to ensure the future of the Professor Harry Messel International Science Schools that he established during the 1960s.

The Messel Endowment will be managed to preserve the real value of donations to it. The surplus interest will be used in the first instance to support the Professor Harry Messel International Science Schools. If income exceeds the requirements of the International Science Schools, the Science Foundation will use the funds to support other initiatives that support the School of Physics. Such activities will be named to honour Professor Harry Messel.

The Science Foundation sincerely thanks the people and institutions that have made donations to the Messel Endowment. All contributions to the Endowment are important to its success and the Foundation acknowledges the following for their generosity.

Galactic Donors (\$100 000 to \$999 999)

Australian Business Limited
Hermon Slade Foundation
Nell and Hermon Slade Trust

Dr Jennifer Nicholls
Dr Brian O'Brien
Dr Stephen Segal
Dr Emery Severin
Southcorp
Ms Valma Steward
Mr John Vipond
Mr Ray and Mrs Margit Walton

Planetary Donors (\$1 000 to \$9 999)

Dr Joseph Beunen
Professor Ron and Mrs Helen Bracewell
Mr Ken Coles and Ms Rowena Danziger
Emeritus Professor Dick and Mrs Marilyn Collins
Professor Lawrence and Mrs Barbara Cram
Mr Trevor Danos
Ms Carole and Dr David Davidson
Professor John and Mrs Madeline Davis
Ms Georgina Donaldson
Dr Robin Fitzsimons
Mr Graham and Mrs Mary Hall
Dr David Harding and Ms Pauline Negomir Harding
Associate Professor Robert and Mrs Helen Hewitt
IBM Australia
Mr Anthony Johnston
Mr R. John Lamble
Ms Danielle Landy
Mr Peter Manettas
Dr W. Bruce and Mrs Janice McAdam

Stellar Donors (\$10 000 to \$99 999)

Mr Terrey P. Arcus
Cecil and Ida Green Foundation
Cochlear Limited
James N. Kirby Foundation
Mr Michael Messel

Asteroidal Donors (\$999 or less)

Mr Arun K. Abey
Mrs Belinda Allen
Australian Association of Phi Beta Kappa
Dr David Blair
Dr Ferg Brand
Mr Arthur Buchan
Mrs Claire Cupitt
Ms Margaret Anne Desgrand
Mr Julian Dryden
Ms Ellen Gesmer
Mrs Ruth and Mr Trevor Lambert
Mr Wen Wee Ma
Mr Timothy Mallam
Dr Robert Masterman
Dr Don Millar
Mr Robert Murphy
Mr Spiros Pandelakis
Mr Harry Pemble
Dr Christopher Phillips
Mr Geoff Pople
Mr John Rawson
Professor Ed Salpeter
Ms Nancy Shoemaker
Ms Jennifer Wanless
Mr David Wood
Ms Anne Woods
Dr Xian Zhou

Introduction

In 1958 Professor Harry Messel started a series of Science Schools. The first four were for high school science teachers, but in 1962 the focus changed to outstanding science students. As the years progressed an increasing number of overseas countries were invited to send scholars, and other changes were made. One aspect that remained constant was the excellence of the Science Schools and the impact they had on the scholars who attended them. In 1998 the Science Foundation for Physics decided to honour the man who had the vision to initiate the International Science Schools and renamed the Schools the Professor Harry Messel International Science Schools. The 32nd Professor Harry Messel International Science School was held in July 2003.

The theme of the 2003 Professor Harry Messel International Science School (ISS2003) was “From Zero to Infinity”. The ISS2003 covered topics ranging from the very smallest scales being studied, such as the building blocks of matter, all the way through to the evolution of the Universe itself.

One hundred and thirty-nine Year 11 and 12 high school science students from eight countries attended the ISS2003 and attended lectures by an excellent group of researchers, and participated in hands-on activities and social events. The students were accommodated at St John’s College for the two weeks of the Science School. This provided ample opportunity for the scholars to interact and learn about each other’s cultures as well as discussing relevant issues.

The correspondence – letters and cards of thanks – from the scholars after the ISS2003 attests to the benefit to the students, for many of whom it was a pivotal experience (see Appendices D and E).

Selection of the Scholars

Eight countries were represented at the Professor Harry Messel International Science School, providing an impressive group of scholars.

The Australian scholars were selected competitively at the State level. The NSW Department of Education and Training, and the Science Teachers’ Associations of the other States formed selection committees to judge the essays and applications. A mix of male and female, city and country, and public and private schools resulted in the scholars forming a reasonable cross-section of the Australian population. For many of the country scholars it was their first time in a “big city”, and more importantly, the first time they had interacted with people their own age who had similar interests in science. Several commented on how exciting it was to be able to talk about their interests, not only without being rejected as a nerd, but meeting an equal degree of enthusiasm in response.

The other countries invited were China, Japan, Malaysia, New Zealand, Singapore, Thailand, the UK and the USA. These countries were each invited to send five scholars, except Japan which has requested that they send ten, Thailand which has requested to send seven as they select one from each of their seven selective schools and New Zealand, which requested to send six. However, due to the SARS epidemic, the Chinese authorities banned all travel by Chinese students and so five extra NSW students were selected to bring the number to 140. One of the USA students was offered a place on the USA Biology Olympiad team and chose to attend that instead of the ISS2003. She achieved a silver medal at the Biology Olympiads and was ranked 24th overall.

Despite some initial language difficulties all the scholars mixed well, and all countries were represented during the question times at the end of lectures.

The full list of students is given in Appendix A.

Structure of the International Science School

The two-week School was an intensive mix of lectures, talks, tours of the School of Physics research groups, hands on experiments and social events.

The lectures were held in the Slade Lecture Theatre in the School of Physics. The topics covered were particle physics, cosmic rays and their impact on the world, biomolecules from organisms that thrive in extreme conditions, light regulating pigments in corals, marsupials, high resolution weather forecasting, geodynamics, marine geo-informatics, extra-solar planets and their characterisation, how the Sun and other stars affect life on Earth, galactic cannibalism and the evolution of the Universe. Eleven scientists with international reputations and the ability to communicate with lay audiences were invited to give one or two lectures each. A full list of the lecturers and their topics is given in Appendix B. Each 50-minute lecture was followed by 30 minutes of question time. Even after this, the lecturers were surrounded by students wanting to know more.

In addition to the lectures there were several talks:

- Dr Karl Kruszelnicki gave two of his “Great Moments in Science[®]”;
- Mr Colin Tyson representing Australian Business Ltd, a Messel Endowment donor, spoke on leadership and careers; and
- Honorary Associate Professor Ian Johnston repeated his very successful ISS2001 presentation on “The image of the scientist in SF movies”.

All of these were very well received.

The scholars were split into groups for the laboratory tours, experiments and other hands-on sessions:

- An astronomy roleplay created by and used with the permission of Dr Paul Francis, ANU;
- Chronic Conic Chaos – an activity run by the School of Mathematics and Statistics on the relationship between parabolas and chaos theory;
- From Hero to Infamy – an activity developed by the School of Physics using basic experiments to “solve” a “murder” mystery;
- A practical run by the School of Geoscience using GPS units to map out the University;
- A session run by the Department of History and Philosophy of Science using the Macleay Museum to help students think about how to communicate their interest in science;
- Who Eats Whom – a laboratory session run by the School of Biological Sciences in which the students studied leaf-litter creatures using microscopes and hence created a food web;
- Tours of most the School’s research departments where hands-on demonstrations were mixed with informative talks;
- A tour of the Electron Microscope Unit;
- Tours of the University (for orientation purposes); and
- An all-day Science and Engineering Challenge run by the University of Newcastle.

Several of these merit further descriptions.

In the astronomy roleplays the scholars were given background information about the imaginary world in which they lived, an apparently flat world with continuous cloud cover and a diurnal variation in the level of light. Each team of three or four students was assigned a role to play – scientists, merchants, smugglers etc. Each team had a piece of information gleaned during their “activities”, and had to trade information with other teams. There was

sufficient information for the students to be able to deduce that they really lived on a spherical world with an external source of illumination (the Sun). The first team to come up with a theory incorporating the bits of information, that was acceptable to the group as a whole was declared the winner. Not only did the students have the opportunity to work in teams and use their negotiation and deductive reasoning skills, but they had the opportunity to see how science operates: the theory that gains acceptance in the scientific community is not always the “right” one.

In some ways similar to the astronomy roleplays, the “murder” mystery provided students with a set of information that they had to piece together to create a theory, but this time they had to perform the experiments themselves. The biology experiment also gave them the chance to work in the laboratory.

As in several previous years, the University of Newcastle again generously provided their expertise. This year the University of Newcastle team arrived for a full day’s Science and Engineering Challenge, in which the groups were split into smaller units to compete in many different science- and engineering-based activities, with the scores from each group aggregated at the end to find the winning group. The activities ranged from pure problem solving in the “Virtual Maze”, through designing lighter-than-air craft of helium balloons with propellers that had to be navigated by remote control around a set course, through to an engineering game where not only was the strength of the chair tested (to destruction) but the cost of manufacture and ease of transport were part of the overall winning strategy. Two events had this test-to-destruction finish, and were held in the Slade Lecture Theatre before the entire Science School, with teams cheering on their teams with great enthusiasm.

All these activities involved the scholars working in small groups to design for themselves solutions to given problems. This enabled them to use their creativity and to actively learn about the subject while doing so. Several of the activities required the students to present their hypothesis/ideas to a wider group, thus giving them experience in verbal presentations. The scholars appreciated having the opportunity to make decisions and to some extent control the direction the activity should take. These activities also encouraged teamwork and were immensely popular with the scholars.

It was not all hard work for the scholars. The evenings and weekends were generally free with the exception of a few organized events such as a Trivia Relay Race and a bush dance organized by the Young Scientists of Australia, NSW Chapter and a concert on the last Thursday organised and performed by the students themselves. Lecturers, supporters, Science Foundation members and School of Physics staff were invited to the Harbour Cruise on the middle Saturday and the Farewell Dinner on the final Friday night, both of which were outstanding events.

Organization

The scholars and the escorts of the groups of overseas scholars were all accommodated at St John’s College, 10 minutes walk from the School of Physics where the lectures were held. While this adds considerably to the cost of the International Science Schools, the benefits compared with accommodating only the visiting scholars are enormous as the scholars form a cohesive whole, and are not split into two groups.

As well as the staff at St John’s College, who worked extremely hard to make sure everything ran smoothly, there were House Parents and ISS staff to oversee and guide the scholars during the ISS2003.

The House Parents, Tim and Catherine Grootenboer, acted as parents for the scholars, dealing with day-to-day arrangements, illness and general well-being, ensuring scholars returned from evening outings, and liaising with the St John's staff. They were essentially on-call 24 hours a day for the full two weeks. Tim and Catherine Grootenboer were the House Parents for the ISS2001 and again proved extremely capable. They maintained discipline whilst engaging with the students and this was reflected in outstanding ratings in the evaluation forms.

Seven ISS Staff, who also acted as guides and mentors to the groups of scholars while on tours and experiment sessions, assisted the House Parents. The ISS Staff were selected from scholars and ISS Staff at the 2001 International Science School, and it says a great deal about the Science Schools that there were so many applicants for a hard and essentially volunteer job. Rachael Brown and Steven Kambouris were chosen from the staff of the ISS2001, and Elana Bont, Daniel Haustead, Pat Mahony, Sarah Pentecost and Charles Wang were chosen from the students attending the ISS2001.

In addition to these people, who were practically on duty 24 hours a day, the Young Scientists of Australia (YSA) looked after many of the social activities during evenings and weekends. The YSA approached the Science Foundation for Physics requesting to be involved in the ISS1997, and preliminary discussions revealed a group lead by a competent, responsible committee, with the same no-smoking, no-drinking policies as apply to the ISS scholars. The experience with the YSA in 1997 was so successful that they have been invited to run social activities for all subsequent Science Schools, including the ISS2003.

In previous years one of the ISS staff members has been the YSA liaison person who did most of the organization for the social activities. After the ISS2001 it was decided that this was not a practical way forward as the work was too onerous for one person. It was decided to have a YSA person, who had also been at the ISS2001, dedicated to organizing the social events. Bridget Honan undertook this role and did a magnificent job. Bridget worked extremely hard, organising:

- Training for the ISS Staff;
- Three to five events every evening and responsible people to escort the ISS2003 scholars to and from the events;
- Several tours on the weekend;
- Organization for a trivia night and bush dance;
- Volunteers to assist with the University of Newcastle Science and Engineering Challenge; and
- A Science Show as part of the official program.

The House Parents, ISS Staff and Young Scientists of Australia did a marvelous job. Without their assistance the ISS2003 would not have been the success it was.

Science School Book

Since 1962 a book containing the lectures given at each Science School has been produced. The book is distributed to all scholars, lecturers, escorts, sponsors and guests associated with the International Science School, and a copy is donated to the library of each high school in Australia. In most States the book was distributed for the Science Foundation by State Departments of Education and Training and various private school associations. The book has been well-received by schools.

Webcasts and DVD

From the 1960 Summer School for High School Teachers the lectures of the Science School were televised, with estimated audiences reaching 100,000. Due to changes in television services, televising the Science Schools ceased in 1980. However, the Science Foundation is aware of the interest in the community and the mutual benefits of broadcasting the ISS lectures. Webcasting had been considered in 1999, but the technology was not yet mature enough.

The decision to webcast a small number of ISS2003 lectures was made in May due to the generosity of the individuals and companies named on page 1 of this report. It was also decided to create a short film of the ISS2003 to support the capital campaign to raise the remaining funds for the Messel Endowment. Given the extensive footage obtained it was also decided to sell a longer film on DVD to interested students as a souvenir. Turning Point Solutions was chosen to produce the webcasts, which can be accessed from www.scienceschool.usyd.edu.au, and the DVDs. The webcasts were well received, and were the most watched items hosted by Turning Point Solutions during July and August.

The technical problems in getting the webcasts onto the web and accessing them by individuals was mainly due to the very short notice in getting the site up and running. If the Foundation decides to proceed with webcasting for future ISSs then the decision must be made earlier enough for these technical problems to be solved prior to the ISS.

The webcast items were:

- 7 July
 - Opening Ceremony with Her Excellency Prof Marie Bashir AC, Governor of NSW
 - Emeritus Professor Harry Messel
 - Dr Geraint Lewis “Galactic Cannibalism”
- 11 July
 - Prof. Virginia Trimble “Warmed by the Sun”
 - Prof. Virginia Trimble “Fed by the Stars”
 - Dr Karl Kruszelnicki “Great Moments in Science[®]”
- 14 July
 - Prof. Jerome Friedman “The Road to Quarks and Beyond”
 - Dr Anya Salih “An Exploration of Light Regulating Pigments of Reef Building Corals from Macro to Micro and Nano-Scales”
- 15 July
 - Dr Christopher Dickman “Australian Native Mammals: Marsupials”
 - Dr Victoria Meadows “The Search for Planets Around Other Stars: Dancing in the Dark”

Publicity

The Science Foundation retained the services of a professional public relations company to raise the profile of the Professor Harry Messel International Science Schools at several levels: in local communities from which scholars came, nationally and internationally. Several media releases were distributed including

- the ISS2003 generally;
- ones about individual scholars (with their permission) to their local newspapers;
- to international papers about the students from their country;

- about the Governor opening the ISS2003;
- about the presence of Prof Jerome Friedman , Nobel Laureate;
- about the webcasts, including timetable; and
- about Dr Karl Kruszelnicki's talk being webcast.

Major newspapers and Yahoo News carried stories on the webcasts and every State had at least one, if not more, local newspaper carry stories on students from their region. Several overseas newspapers published items as did several web news services. The ISS2003 overlapped two major international science conferences with large public relations machines and so was in a time of stiff competition. The full publicity report of Splash PR is given in Appendix F.

The Board of Studies also carried an article about the International Science Schools in their newsletter, as did the Science Faculty "Science Alliance" magazine. The University News covered the ISS2003 and webcasts in its International Edition in October.

Educational Outcomes of the International Science Schools

Attendance at the Professor Harry Messel International Science Schools is a very enjoyable and enriching experience for the scholars and they make many good friends from different parts of the world. The interactions result in personal benefits to individual scholars. The International Science Schools also have important educational outcomes as detailed below.

The scholars learn about several important and relevant areas of science. The lectures that are presented, and many of the other experiences of the International Science Schools, deal with modern science in significant breadth and depth. Many students comment on the breadth of the topics, noting that prior to the International Science School they had had no idea that science was so diverse. The information gained through attending the Science Schools is really beneficial in the context of the scholars' overall scientific development.

Scholars have contact with acknowledged experts in many different fields. This contact is in the form of lectures, in direct one-to-one conversations, and through other interactions with staff of the School of Physics, and elsewhere from the University. Through these contacts the scholars observe scientists in their working environment. The scientists provide a role model for scholars that aids them in making decisions about future career directions.

Through the tours of cutting-edge research laboratories, and other activities during the International Science Schools, scholars see modern scientific equipment and instrumentation techniques, and gain some familiarity with the way in which science is undertaken.

Scholars at the International Science Schools participate in formal and informal projects. Some of these projects teach scholars about experimental design and, importantly, about the trade-offs necessary between design and performance of equipment, and the costs of such equipment.

The International Science Schools provide a rich cultural environment. Through the contact with their peers from other parts of the world and from different parts of Australia, the perspective of the scholars is broadened. They develop an appreciation of learning environments elsewhere, and obtain insights about the nature and validity of approaches taken in their own educational system.

The Science Foundation continues to maintain the practice of donating a copy of the book of the lectures to every high school in Australia. These holdings have continuing and growing educational value through the diversity of topics that they cover, and their relevance to the educational curriculum and the academic development of school students.

The webcasts have a similar impact as the books, making the lectures available to many who would not otherwise have been able to attend. They have the advantage of being more generally available, with a wider and international audience.

Financial Statement

The Science Foundation for Physics could not run the International Science Schools without the generous support of the donors and grantors, some of who have supported the International Science Schools for many years. We are very grateful to all whom contributed to make the 2003 International Science School possible.

Appendix C gives a statement of the finances of the ISS2003 as at 31st October 2003, when all but a few minor items were accounted for.

Conclusion

The 2003 Professor Harry Messel International Science School was a tremendous experience for 139 top-class scholars from around the world, who had the opportunity to hear world-class researchers and be exposed to cutting-edge science. The scholars had the opportunity to interact with peers who are also interested in science – a novel experience for some who come from small schools or backgrounds where education is not a high priority.

The International Science School has already had some results, with scholars finding new confidence in themselves or realizing how they want to spend their working lives, but the full impact will not be realized for a long time to come.

Dr Jennifer Nicholls, Executive Officer

December 2003

Appendix A: ISS2003 Scholars

Australian Scholars

Australian Capital Territory Scholars

Ms Emily Bek Hawker College
Ms Elizabeth Deer St Clare's College

New South Wales Scholars

Ms Shafagh Bakhshalian Georges River College Oatley Senior Campus
Mr Richard Brasier Tumbarumba High School
Ms Gemma Brett Singleton High School
Mr John Brown Alstonville High School
Ms Emily Jane Burke Mackillop Senior College
Ms Jing Yi (Jeannette) Cao North Sydney Girls' High
Ms Lillian Chain Fort Street High
Ms Sabrina Chan Pymble Ladies' College
Ms Aimee Chau Fort Street High
Ms Shien-Ning Chee MLC School
Ms Emma Jayne Clark Gundagai High School
Mr Shawn Columbus Northlakes High School
Ms Brittany Cooper Tara Anglican School For Girls
Mr Matthew James Couch Grafton High
Miss Diana Liwen Dai Danebank An Anglican School For Girls
Ms Christiana Doran Monte Sant' Angelo Mercy College
Mr Henry Fitzpatrick Model Farms High School
Ms Alison Freeth Loreto Normanhurst
Ms Leanna Gibbs Finley High School
Mr Casey Handmer The Scots College
Ms Shannon Xue Yan He James Ruse Agricultural High School
Mr Addison He Fort Street High School
Ms Sally Holden Tara Anglican School For Girls
Ms Emma Juliet Hunt Masada College
Ms Jenna Joester Roseville College
Ms Lyndell Kelley Finley High School
Ms Jessica Tin Yan Lai North Sydney Girls High
Ms Deborah Lau MLC School
Ms Coco Sze Hang Leung Pymble Ladies' College
Mr Paul Linabury Mullumbimby High School
Ms Vicki Lowe Fort Street High School
Ms Shayne Lui North Sydney Girls High
Ms Blossom Mak North Sydney Girls High
Ms Kim McKenzie Northlakes High School
Miss Hong Dao Nguyen Strathfield Girls High School
Ms Siobhan O'Sullivan PLC Armidale
Mr Warren Oakes Cranbrook School
Ms Eirwyn Ollerton St Marys Senior High School
Mr Abhijit Pal James Ruse Agricultural High School
Mr George Papadopoulos Rosebank College
Ms Elin Park Pymble Ladies' College

Ms Louella Joy Pink	Coffs Harbour Christian Community High School
Mr Deon Poncini	Camden High School
Mr Shu Ren	Merewether High School
Ms Laura Rice	Abbotsleigh School
Ms Louise Rigozzi	St Marys Senior High School
Ms Nicole Elizabeth Ring	Kempsey High School
Ms Allison Runk	Melville High School
Ms Jing Shi	North Sydney Girls High
Mr Peter Gong Zhe Shi	Fort Street School
Mr Adam Milon Srejber	The McDonald College
Mr Junji Tai	Homebush Boys' High School
Ms Amelia Joy Thompson	Abbotsleigh
Ms Celia Tier	PLC Armidale
Ms Theonie Yvette Trianta	Santa Sabina College
Ms Anna Tsalapatani	Killarney Heights High School
Ms Shailla Van Raad	Brigidine College Randwick
Mr Kendrick Michael Walter	Willyama High School
Ms Alanna Warner	SCEGGS Darlinghurst
Mr John Warren	St Patrick's College, Sutherland
Mr Harry Mark Waters	Tumbarumba High School
Ms Jane Maree Watson	Merewether High School
Miss Celeste Webb	Murrumburrah High School
Ms Victoria Wong	Pymble Ladies' College
Ms Nina Yang	Rosebank College
Ms Christina Yap	Pymble Ladies' College

Northern Territory Scholars

Ms Alexandra Hofer	Darwin High School
Ms Peta Steller	Our Lady of the Sacred Heart College

Queensland Scholars

Mr Ian Garrad	Aspley State High School
Ms Karla Pollard	Tannum Sands Senior High School
Ms Claire Reeves	Aspley State High School
Ms Natalie Jane Spillman	Mackay North State High School
Mr William Spraggon	Marist College Ashgrove

South Australian Scholars

Mr Stephen Bolling	Nacacoorte High
Ms Casey Doolette	Pedare Christian College
Mr Harold Gathercole	Balaklava High School
Ms Karen Hardy	Balaklava High School
Mr Brett Neale	Bordertown High School

Tasmanian Scholars

Miss Julia Leeson	St Michael's Collegiate School
Mr Kaspar Jack Willson	The Friends' School

Victorian Scholars

Ms Stephanie Ayres	University High School
Ms Chiara Bryan	Box Hill High School
Mr Andrew Burns	King's College
Ms Tess Doolan	Emerald Senior College

Mr Nathan Gallacher
Ms Geraldine Ng
Mr Adam Pankhurst
Mr Christopher Phoumsavanh
Mr Chathura Wijetunga
Mr Jonathan Wong

Western Australian Scholars

Ms Vicki Gill
Mr Owen Hetherington
Mr Jesse Li
Ms Ruth Mills
Mr Timothy Whitmore

Bellarine Senior College
Methodist Ladies College
Newhaven College
Wellington Senior College
Penleigh and Essendon Grammar School
Balwyn High School

Willetton Senior High School
Narrogin Senior High School
Mount Lawley Senior High School
St Hilda's Anglican School for Girls
Scotch College

Overseas Scholars

Japanese Scholars

Ms Azusa Naito	Misono Jogakuin Senior High School
Ms Ayaka Yamauchi	Fukiai Senior High School
Ms Ayumi Fukushi	Hirosaki Senior High School
Mr Tomoyasu Man-i	Matsuyama Minami Senior High School
Mr Yohei Yamauchi	Takefu Higashi Senior High School
Ms Tomoko Okumura	Tsu Senior High School
Ms Mana Shimaguchi	Nagasaki Minami Senior High School
Ms Aya Kikuchi	Kyuyo Senior High School
Ms Maiko Hirai	The Senior High School at Otsuka, The University of Tsukuba
Ms Erina Ogata	Yonezawa Kojokan Senior High School

Malaysian Scholars

Mr Keat Meng Chong	SMK Seri Kampar
Mr Bi-Hong Low	Chung Ling High School, Penang
Ms Azalea Hani Othman	SMK Abdul Rahman Talib
Ms Manmeet Kaur Rabindarjeet Singh	Sekolah Menengah JK Chung Hwa
Mr Felix Swee Then Kho	SMK Green Road

New Zealand Scholars

Mr Ricardo D'Souza	Marcellin College
Mr Jin-Woo Park	Christ's College
Ms Tiam Maghsodi	Otago Girls' High School
Ms Kylie Sedon	Hamilton's Fraser High School
Mr Jargil Santos	New Plymouth Boys High School
Ms Hester Goodwin	St Josephs Maori Girls College

Singaporese Scholars

Mr Tau Ming Aaron Gan	Raffles Junior College
Mr Yi Fan Lim	Hwa Chong Junior College
Mr Chin Siang Ong	Raffles Junior College
Mr Yeong Heng Pua	Hwa Chong Junior College
Mr Liangzheng Tan	Raffles Junior College

Thai Scholars

Ms Nattanun Chawang	Hatyaiwittayalai School
Mr Niwart Yoowong	Sriboonyanon School
Ms Naphat Chantaravisoot	Bodindecha (Sing Singhaseni) School
Mr Ampol Likitchatchawankun	SamsenWittayalai High School
Ms Sasiporn Prasertpalichat	Yupparaj Wittayalai School
Ms Pornphaka Suksaen	Kaennakhonwitthayalai School
Miss Chalita Toopsuwan	Phra Pathom Witthayalai School

United Kingdom Scholars

Mr Alex Baneke	Dr Challoner's Grammar School
Mr Peter Stilwell	King Edward VI College
Ms Eleanor Nalson	Simon Langton Girls Grammar School
Ms Monica Barker	Parliament Hill School/LaSWAP
Ms Sarah Garner	Northampton High School

United States of America Scholars

Ms My-Linh Nguyen	Thomas Jefferson High School for Science and Technology
Mr Sumanth Ravipati	Thomas Jefferson High School for Science and Technology
Mr Paul Yang	Thomas Jefferson High School for Science and Technology
Mr Michael Zhang	Thomas Jefferson High School for Science and Technology

Appendix B

Lecturers and Topics

Dr Rachel Codd, BVR Lecturer in Bioinorganic Chemistry, School of Chemistry, The University of Sydney.

Biomolecules from Extremophiles

Extremophiles are organisms that reside under extreme conditions of temperature, acidity, salinity and/or pressure. Each of these microenvironments forces the resident organisms to evolve adaptive mechanisms, which are imprinted upon the chemistry of their biomolecular libraries. Studying the adaptive mechanisms at the molecular level provides fascinating insights into how biomolecules work in response to specific environmental challenges and has wide ranging implications from evolution to biotechnology.

Biography

After completion of her PhD in Chemistry at the University of Sydney in 1998, Dr Codd undertook postdoctoral research at the University of NSW and the University of Arizona, USA, where she studied the interactions between biomolecules and transition metal ions, using biochemical and chemical techniques. During her time in Arizona, Dr Codd was introduced to a fascinating class of metal-containing enzymes (metalloenzymes), which seeded her current interest in metalloenzymes expressed by extremophilic organisms. Upon her return to the University of Sydney in 2000, Dr Codd established a research program into extremophilic metalloenzymes and also in alternative areas of bioinorganic chemistry, with a medicinal focus.

Dr Christopher R. Dickman, School of Biological Sciences, The University of Sydney.

Australian Native Animals

Marsupials are conspicuous components of Australia's native fauna, and they provide some of the country's most familiar icons. Dr Dickman described each of the four major orders of marsupials that occur Down Under and reviewed some of the exciting new insights that are being gained into their biology. Marsupials have undergone a spectacular radiation from humble beginnings over 100 million years ago; their future security is in our hands.

Biography

After completing his PhD on marsupial ecology at the Australian National University, Dr Dickman spent two years as a postdoctoral fellow at the University of Oxford, UK, before taking up a lectureship at the University of Western Australia. He has been at the University of Sydney since 1989. Dr Dickman became President of the Australian Mammal Society in 2000 and co-chair of the IUCN Marsupial and Monotreme Specialist Group in the same year. His main research interests lie in studying the factors that influence mammalian population dynamics and diversity.

Professor Jerome I Friedman, Nobel Laureate, Insitute Professor, Department of Physics, Massachusetts Institute of Technology, USA

Particle Physics

Biography

Professor Friedman received the Nobel Prize in Physics in 1990 for his pioneering investigations concerning deep inelastic scattering of electrons on protons and bound neutrons, which have been of essential importance for the development of the quark model in

particle physics. A brief autobiography can be found at <http://www.nobel.se/physics/laureates/1990/friedman-autobio.html>.

Professor David N. Jamieson, Director, Microanalytical Research Centre, School of Physics, The University of Melbourne

Cosmic Rays as a Hazard for Aviation

Cosmic rays are very fast ions that rain down on the outer atmosphere of the Earth. Their origin and the source of their enormous energies remain obscure. When you fly, Earth's atmosphere no longer shields you from the radiation from cosmic rays, which passes through your body and through the electronics of the aircraft. This lecture, illustrated with live demonstrations of radiation interacting with matter, presented measurements of cosmic rays at the cruising altitude of jet aircraft and discussed the hazards of this radiation to people and electronics. Finally, it was shown how the signals produced by the impact of ions with matter can be used to construct a quantum computer that uses single atoms as its active components.

Biography

Professor Jamieson is the director of the Melbourne node of the Australian Research Council Centre of Excellence for Quantum Computer Technology, which commenced in 2003. In the Centre he uses his expertise with ion beams to develop and apply methods of precision single atom doping to the construction of quantum computer devices that employ single atoms as their active components. This expertise has been developed from his research work with nuclear microscopy where focused MeV ion beams are used for materials modification and analysis. Applications include charge injection and transport studies in semiconductors (Si, SiC, diamond), the materials aspects of ion solid interactions including modeling, the applications of ion implantation and the development of sophisticated laboratory instrumentation. He has been a finalist in the Australian Awards for University Teaching and has published over 140 papers in scientific journals and 1 book.

Professor Lance Leslie, Director, Centre for Environmental Modelling and Prediction, The University of New South Wales and, Robert E Lowry Chair, The University of Oklahoma, USA.

High Resolution Meteorology

Meteorology has a very long history of scientific study, stretching back to classical civilizations. Many terms, including the term 'meteorology' itself, were coined by the ancient Greeks. Perhaps strangely, it has only been just over a half-century since the first computer weather prediction was made. In his first lecture he traced the rich history of computer weather prediction, focusing on the derivation of the very complex, set of non-linear mathematical equations governing the behaviour of the atmosphere (and also the oceans). This lecture started as a discussion of how weather predictions are carried out and finished with an example from the tragic Australian bushfires of 2002/2003. In the second lecture, it became clear why high-resolution weather forecasting is rated in the very top group of grand challenges facing computational science today. Almost all human activity is affected by weather (and climate) and in the second lecture, Prof. Leslie examined a wide range of examples of the application of his computer weather modelling system. These applications include the Sydney 2000 Olympics, the Sydney hailstorm of 1999, and some severe weather events including flood rains and tropical cyclones making landfall. The second lecture finished, appropriately, with words of both promise and caution. The caution follows from the inherently unpredictable (chaotic) system of mathematical equations that must be solved.

Biography

Professor Leslie has had a long career in computer weather prediction, dating from his undergraduate and graduate years at the University of Sydney and Monash University. He has

held senior positions with the Australian Bureau of Meteorology, CSIRO and is now at the University of New South Wales and the University of Oklahoma. In 1994 Professor Leslie received the Max Planck Research Prize for his development and application of a new weather and climate research model. He has published one book and nearly 200 journal articles. Current research interests include computer weather prediction, computational fluid dynamics and geophysical fluid dynamics.

Dr Geraint F Lewis, School of Physics, The University of Sydney.

Galactic Mergers

The Sun is but one of 200 billion that makes up our Milky Way Galaxy, and ours is but one of billions of galaxies in the Universe. Astronomers are now asking where does all this structure come from? The answer appears to be that galaxies grew over time, getting larger via the consumption of smaller systems. In his lecture, Dr Lewis discussed the evidence that this process is still ongoing, that our Galaxy's waistline is still increasing as it digests systems that have strayed too close. Dr Lewis concluded by looking at the eventual fate of the Milky Way, which is due to collide with its sister galaxy in three billion years time.

Biography

Dr Lewis was raised in the coal mining valleys of Old South Wales, and rarely got to see the stars. A childhood interest in science led him to a degree in physics and astronomy from the University of London in 1990. It was there that he realised that he could make a career out of science, and he went on to complete a PhD at the Institute of Astronomy at Cambridge. His postdoctoral career took him to the USA and Canada, but in 2000 he came to Australia to work as a research astronomer at the Anglo-Australian Observatory. Since 2002, Dr Lewis has been a senior lecturer at the School of Physics. His research interests focus upon galaxy formation and evolution, as well as studying cosmology and the phenomenon of gravitational lensing.

Dr Victoria Meadows, Principal Investigator NASA Astrobiology Institute, Pasadena, California, USA.

The Search for Habitable Planets

The search for life beyond the solar system starts with the not-so-simple step of discovering other worlds, and learning how to recognize worlds that could harbor life using only remotely sensed information. In her first lecture, *The Search for Planets Around Other Stars: Dancing in the Dark*, Dr Meadows described the search techniques and strategies used to discover extra solar giant planets, and the techniques planned for detection of Earth-sized extra solar planets. This discussion included the overall difficulties inherent in extra solar planet detection, the successes and limitations of each detection technique, and the advanced space-borne missions planned to extend the search over the next decade. In her second lecture, *The Search for Habitable Worlds: How Would We Know One If We Saw One?*, Dr Meadows provided an overview of the new theoretical field of extrasolar terrestrial planet characterization. This discussion will include the observable characteristics of an extrasolar planet that might indicate habitability or the presence of life, and how we might model extrasolar terrestrial planets to assist in the design and data analysis for future extrasolar terrestrial planet detection and characterization missions.

Biography

A graduate of the University of Sydney, Dr Meadows has worked as a planetary scientist at the Jet Propulsion Laboratory in Pasadena California for the past nine years. She also leads a NASA Astrobiology Institute team that is working to understand how to recognize signs of life on extra solar planets.

Dr Dietmar Müller, Director, Institute of Marine Science, School of Geosciences, The University of Sydney.

Geosciences

Marine Geoscience has always been the poor cousin of geosciences in Australia. Due to Australia's riches in onshore mineral resources, much of geology and geophysics has traditionally been focused on hunting for gold, silver, copper and other precious minerals. Today Australians are slowly realising that they actually live on a large island, associated with one of the biggest ocean territories in the world, even more enormous than continental Australia. Most Australians live within 50 km of the sea. How do we manage and develop our coasts and continental shelves? What can we do to better understand impending global climate and sea-level changes, and those changes that have occurred in the geological past? The answer lies in geo-informatics, advanced Linux computing, and open standards that allow us to combine geoscience databases with cutting edge computer modeling hardware and software.

Biography

Dr Müller received his undergraduate degree from the University of Kiel, Germany in 1986, and his PhD from the Scripps Institution of Oceanography in 1993. He has worked on the tectonic evolution of all ocean basins, and on integrating plate kinematics and basin evolution with geodynamic models, focusing on the ocean basins and margins. In 2002 he was appointed as founding Director of the University of Sydney Institute of Marine Science (USIMS).

Professor John Peacock, Royal Observatory Edinburgh, UK.

The Early Universe

Modern cosmological research has suggested an astounding life history for the main features of the Universe. So-called "inflationary" cosmology postulates that the currently observable Universe, of size approximately 13 billion light years, originated in a volume smaller than an atomic nucleus. At this point, quantum fluctuations seeded small irregularities in density that continued to grow over time, resulting in the gravitational collapse of galaxies and the network of superclusters that we inhabit today. Observations now verify this picture back to a time when the Universe was less than 500,000 years old. Prof. Peacock's lectures explained these key ideas of cosmology, discussed how they are tested observationally, and looked towards the future.

Biography

Prof. Peacock read Natural Sciences at Jesus College, Cambridge, where he also obtained his PhD. His research interests are in observational and theoretical cosmology, with special emphasis on structure formation in the universe. He is well known for his work on the evolution of high-redshift galaxies and on the large-scale clustering of galaxies. He is a frequent lecturer at summer schools and is the author of a textbook on cosmology. He has worked in Edinburgh throughout his postdoctoral career, and is currently Professor of Cosmology in the University of Edinburgh.

Dr Anya Salih, Research Fellow, Electron Microscope Unit and The Australian Key Centre for Microscopy and Microanalysis, The University of Sydney.

An Exploration of Light Regulating Pigments of Reef Building Corals from Macro to Micro and Nano-Scales

Dr Salih has been involved in research of the ecology and biology of corals for almost twenty years. She started her career by researching the community structure of reef building corals in remote areas of the Red Sea. Her PhD at The University of Sydney focussed on physiological and micro-cellular responses of corals to stress and it was then that she discovered the suncreening properties of coral colour pigments. Her research focuses on elucidating the

biological role of colour pigments of corals, on the study of their microstructure and optical properties.

Biography

Dr Salih has been involved in research of the ecology and biology of corals for almost twenty years. She started her career by researching the community structure of reef building corals in remote areas of the Red Sea. Her PhD at the University of Sydney focussed on physiological and micro-cellular responses of corals to stress and it was then that she discovered the sunscreening properties of coral colour pigments. Her research focuses on elucidating the biological role of colour pigments of corals, on the study of their microstructure and optical properties.

Dr Virginia Trimble, Professor of Physics University of California and Visiting Professor of Astronomy, University of Maryland College Park.

Children of the Sun and Stars

Warmed by the Sun; Fed by the Stars. We are, in a very old cliché, the children of the stars. This means at least two things. First, all the chemical elements that make life possible – nitrogen for proteins, carbon for carbohydrates, oxygen to breathe, iron in your blood cells – are the products of nuclear reactions in stars that lived and died before our solar system formed. Second, all of the heat and light that makes life possible on Earth today and most of the stored energy in various forms that we use, are direct products of ongoing nuclear reactions in our own Sun. Together the Sun and stars make possible complex chemistry (meaning us) over a long very time, at least billions of years.

Biography

Prof. Trimble oscillates at a frequency of 32.7 nHz between University of California, Irvine (where she has tenure) and University of Maryland (where her late husband, John Weber, was tenured). She holds degrees from Hollywood High School, University of California (Los Angeles), California Institute of Technology, and Cambridge University (UK). She had served on the governing bodies (somehow usually as vice president) of the International Astronomical Union, the American Astronomical Society, the American Physical Society, and the American Association for the Advancement of Science. Her current research interests include the structure and evolution of stars, galaxies, and the universe and of the communities of scientists who study them.

Appendix C

Audited Financial Statement

Appendix D

Letters of thanks from scholars, parents and high schools

(Emails have been reproduced without headers and footers so no address information is shown. Some correction of fonts has been performed eg „, replaced by “, but no editing of the writers’ words has occurred.)

Hello Jenny,

This is Louise Rigozzi, one of the ISS_2003 students. I,m sorry to be such a pain, but in the fluster of yesterday morning I forgot to return the keys! Sorry!

There are a few ways of getting them to you that I have thought up. The first is my sister who will be returning to Sydney University in a weeks time, who I’m sure if I ask nicely, would be able to return them. The second is to post them down, or if postage is unreliable for some reason, I can come down by train and deliver them myself.

I also wanted to sincerely thank you for organizing Zero to Infinity. I had a truly wonderful time, and like one of the staff said – “by the end of the two weeks you won’t want to leave”. So true, so true!

A lot of students raised in conversation “the Zero to Infinity experience has changed my life” and “I used to be a quiet person but now I can talk to people more easily” (a quote from [...], although I’m not sure if those were his exact words nor if he likes me quoting him!). Over the last two weeks, I myself witnessed a number of positive transformations, which were truly delightful to see.

Although many found the lectures were challenging, they offered the rare yet exciting opportunity to taste the worlds of unknown possibilities. This opportunity is far beyond anything a typical Western Sydney public high school student could ever dream of. This, yet again, exemplifies my appreciation and amazement for the wonderful opportunity the scholarship offered me. Realising how much I don’t know about the world both challenges and intrigues, and encourages a more meaningful depth to thinking other than that of “I wonder for how long I can postpone my English essay?”

The experience also established a connection for myself between the school syllabus and its applications. This gain may sound somewhat trivial, but I found it a large, positive step for myself. Although beforehand I enjoyed science very much, to be honest I hadn’t really thought about its useful applications.

The staff and students created an enjoyably comfortable and relaxed atmosphere. There was an interesting and inspiring range of like-minded yet individual personalities.

I thank you again, and hope that all those involved found the experience as rewarding as myself.

Louise Rigozzi

Hi Jenny!

I’m writing to you for a couple of reasons, the most important being to say how much I enjoyed the ISS2003!! I loved it so much, and I’ve also made what I hope will be life-long

friends who I will never forget, and I just wanted to thank you deeply for your time, effort, and enthusiasm which I think made the ISS2003 what it was! I found everything very interesting, and am now thinking along the lines of astrophysics, as well as various types of engineering, perhaps I'll combine the two and design robots for Mars!

The second reason, which is a slightly embarrassing one, is that I actually left my jacket on the couch outside the lower common room in St. Johns on the second Friday morning, and when I came back about an hour later it had disappeared! I was just wondering if it is handed in could you please let me know? Only if it's not too much trouble! It should be named, if not it is a middle-grey colour with a black zip-out polar fleece vest inside, thank you!

Once again, thank you for everything, it was a true once-in-a-lifetime experience and I appreciate being given the opportunity to attend.

Yours,

Adam Pankhurst

PS I would be very interested in coming back as a 'Staffie' for the ISS 2005, so I'll be sending my application form soon!

Dear Jenny,

It is a pleasure to inform you that the ISS_2003 Japanese scholars arrived at Narita yesterday evening, and all the participants have arrived their own home towns by today.

They say that they have had the most wonderful experience in their lives. I sincerely thank you and all the staffs of ISS_2003.

all the best,

Habby [escort for the Japanese students]

hi jenny,

thank you so much for those two weeks. they were absolutely fabulous and although my speech really didn't show how much everyone there truly appreciated it, we all enjoyed ourselves and are extremely appreciative. thanx
one small thing though, i ordered a dvd but didn't get one, and i can't remember if they were given out there or will be sent to us. if you give me an email back to tell me what's happening it'd be great
thanx again
celeste webb

Dear Bob

Thanks a lot for the 2 weeks. I enjoyed very much!!
By the way, I might forget my souvenir in the room, 435. It is in a

white-paper bag and the size is not so big. The inside is an apron. Could you check and if you find, send me collect??

From ISS2003, Ayaka Yamauchi, Japan.

Thanks for your email. Returned home Sunday night. I would like to thank you, your organization and everyone else especially Mr and Mrs G, and the staffees for all their assistance and warm-heartedness.

To be honest, there are no words within me that can possibly describe this unforgettable experience. I mean, the places, the atmosphere, and most of all - the people.

How I, and many others scholars would give their worlds up to be able to live those two weeks once again. On behalf of myself and the other scholars, I thank you, and the other people that organized and contributed to the science school.

The first thing we were told on arrival is that it would be the best two weeks of our lives up to this point. In my opinion, that is an understatement.

Again, for the happiness, and for the tears, on behalf of everyone, I thank you.

~ Kendrick Walter ~ ISS '03

Dear Dr. Nicholls,

In case you don't remember me it's perfectly fine. The reason I write to you is that I never got a chance to really thank you for the wonderful job you did at ISS03. So here I go, thanks a lot for everything, for all the announcements and all the emails before it started and all the advice. I felt really sorry for you and Prof. Hewitt when you had to come down to the airport with Jonathon's bag that he forgot. ISS really inspired me, and the only regret I have is that I forgot to take a proper camera (I had to carry a big bulky camcorder which was pointless). In fact, I'm really into coming back as a staffie to the next ISS. I'll probably see you again then and have a chance to thank you in person and Prof. Bob Hewitt as well

again thanx

chat

(chathura wijetunga-victoria)

Dear Jenny,

Thanks a million million million for the 2 weeks you gave us all...I had some of the best times I have ever had, and i'm going to have to come back to Sydney. I'm even thinking of applying to do medecine at Melborne, apparently they have a good undergraduate medecine course.

Also, I meant to buy one of the group photos, but didn't manage to get one. Do you still have some? I could send you some money in the post or something. Alternatively you could also e-mail it to me, but the real thing would be better.

Many thanks again - to you and everyone who helped give us such an amazing time,
Alex.

Dear Prof. Nicholls (Jenny) I was writing to thank you for the great experiences that you let me experience. I could never of made so many great life friends without the assistance of you. Thank you. I was also wondering if you could please let me know Mr.Grootenboer and Mrs.Grootenboer email address so i can also thank them. I would like to comment on the quality of the staff also. If i were to come back as a staffie for the 33rd ISS i would LOVE to be a co-staffie with Steve Kambouris and Daniel Haustead. They really helped the students through the 2 weeks. ISS wouldnt have been the same without them. You are a great judge of character! Thanks Kim McKenzie

Dear Jenny

This is Mana!!! I got home on Sunday. The flight was good and safety. I was a little tired. But now I'm OK!!! (I ate Timtam.)

ISS2003 gave me a lot of things. I already miss all of people in ISS. Thank you for taking care of us.

I will do my best for my future.

Sincerely yours,
Mana Shimaguchi (Japan)

Hello,Jenny. I'm Aya. I came back home safely. I had wonderful time in ISS. I believe it was best experience in my life. I appreciate your kindness. I feel my horizon would broaden. I want to study more making use of what I learned in ISS. I also hope ISS will develop more in the future. Thank you for giving me great two weeks.

Hi, Jenny.I'm Ayumi, one of the Japanese students.

Thank you for everything in ISS-03.I had really good time in Sydney.I'll never forget these brightest days!!I hope I'll be back to Sydney some day in the future.

Take care

Bob

G'day mate!!

This is Tomoko from Japan.

I would like to appreciate you for your gratefulness of having us all at ISS 03.

I enjoyed my 2 weeks very much, it was very honorable to be able to take part as one of the student there. Because I was not taught science in English, some of the words used in lectures were quite difficult to understand for me, but still, thanks to the proffesors (doctors), the lectures were very interesting, and I enjoyed it very much.

I also made many many friends, much more than I expected, all of them so kind and smart and fun to talk to, they made my stay even more enjoyable, and I remember myself always smiling at ISS!

It is all thanks to you that I was able to have such an unforgettable 2 weeks.

I am sorry my English is not good enough to thank you with appropriate words.

Now that I am back in Japan, I will do my best to enter the university I want to go.
I still have not decided what I want to be after I graduate university, but I cannot talk about "after graduation" before I even get into the university, can I?

Anyway, all I want to say is that,

#1 Thank you for managing this HUGE event

#2 I had safe journey home

#3 Thank you again for everything

I am sorry that I did not have a chance to talk with you more, I liked you very much! :)

I apologize if this mail was rude and made you upset.

I have never sent a "formal" email before and also, I am not too good in English.

Sincerely, Tomoko OKUMURA
(ISS 2003)

Dear Dr Nicholls,

32nd Professor Harry messel International Science School 2003

I would like to congratulate you and your team who brought the whole event to such great success. Well done.

The flow event was excellent, there was no glitches whatsoever since we landed at Sydney International Airport till we left in the early morning on the 19 Jul. Things moved on like clockwork, there was no surprises and participants know exactly what will be taking place all the time.

It was an enriching experience for myself as well as the students. The interaction among the escorts lead us to a deeper understanding of the education emphasis of the participating countries. From the lectures, talks and activities that were arranged the views of the on science students have greatly broadened which I believe will stay with them for the rest of their lives. Besides being academically challenged, the social activities were superb. They were lively and ensure maximum interaction. In ISS 2003 we had spent an unforgettable 2 weeks of our life and also established a good network of friends from all over the world.

Thank you again for the invitation to participate in the programme and we look forward to participating in the 33rd Professor Harry messel International Science School 2005.

Cheers and best wishes in future endeavours

Wong Seok Hua (Mrs) [escort to the Singaporean students]
Curriculum Planning Officer/Science
Curriculum Planning and Development Division
Ministry of Education
Singapore

Thank you for the kindness you have shown us over the 2 weeks. Thank you for everything you have done for us.

I had a great.

Yesterday, I went to the Australian Embassy in Japan to get information of how to enter the University of Sydney.

I really want to go to the university. Because of most up-to-date technology and so on.

I will do my best to enter the university.

Thank you for a wonderful time.

maiko hirai(Japan)

We, the Singapore delegation, had had an absolutely wonderful and fantastic time at ISS 2003. It was an eye-opening experience, totally unlike any other that we have ever encountered, and we have learned much and gained much, both intellectually and socially. We will remember the knowledge acquired from the lectures, the memorable sightseeing tours organised and most importantly, the friends that we have made. We would like to thank all at ISS 2003 for organising the event and for all they have done to make it such a blast: Dr Messel, Dr Hewitt, Dr Nicholls, the staffies, Mr and Mrs Grootenboer, the college staff, the YSA members, the lecturers and all who had in one way or another contributed to the marvelous and enjoyable experience that we have had. Thank you, from the students of Singapore!

Aaron Gan
Lim Yi Fan
Ong Chin Siang
Pua Yeong Heng
Tan Liang Zhen
Wong Seok Hua

Hi, Jenny. I'm ISS- 03 Student.

I could get home safely .

Thanks a lot enabled me to join this school.

I have faced many difficulty, and I could find what I should do from now.

I'll do my best . Os=おす=押忍!!!

Dear Jenny,

It has been already a few days since I came back to my home in Yokohama.

I think of you every day. I treasure all the happy memories and all the surprises during my stay over there.

When I saw the application blank of ISS2003 at my school, I decided to entry for this program. That is the From Zero To Infinity for me. I was elected scholar, and as often as I received mail from you, I became more and more excited.

I'm glad to have lectures of so many great professors, and to study with all over the world people. I had a very good time with them.

I'm very interested in Australian native animals. So Dr. Christopher R. Dickman's lecture was impressed me.

I asked a question about marsupial in his lecture, that is a big encouragement to me.

In the future, I want to learn about animals, and visit the area they live. I'll certainly come to Australia to meet duckbill and quokka.

Thank you for all the staffs kindness.

There is a note I treasure. This is a message note from ISS friends. They wrote to me "keep in touch". I'm happy to see this word.

My parents asked me to send you their best regards. Thank you for everything.

Azusa Naito

Dear Jenny

Thank you once again for a fantastic 2 weeks - all your hard work made it so enjoyable and such a brilliant experience! Keep up all the good work - you really made it an unforgettable experience for so many people!

I hope everyone 'down under' in Australia is well.

I'm emailing you to see if you could give me a contact address for John Peacock, as I really enjoyed his lectures, and seeing as there is no material in the book, would like to get in touch with him and see if he can help supplement the notes I took on his fascinating talk.

I'd really appreciate it if you could help me on this!

Thanks in advance

Sarah Garner

Hi Jenny,

I just wanted to thank you for everything you did on ISS 2003 - it was an amazing experience for me, as I'm sure it was for everyone! Although I was a bit sick when I arrived home (as were a lot of people it seems - probably from lack of sleep from doing too many things in two weeks!), it was the most informative, stimulating, and enjoying two weeks I've had in a long time! I've made friends that I know will still be there in many years time, and learnt things that I would otherwise never have known.

So thank you for all the effort and hard work you put into it! We all definitely reaped the benefits of it!

From Geraldine Ng (ISS 2003 scholar, Y12 Methodist Ladies' College, Victoria)

Dear Dr Jennifer Nicholls,

Its Erina Ogata here from the International Science School in Japan!

Thank you for your Email.

I arrived home safely. We are struggling with hot and humid summer days here while you are in the midwinter in your country.

Thank you very much for all your kindness and hearty hospitality you gave to me during my stay.

It was my great pleasure to know all of you.

I won't forget you all forever as well as all the great time at ISS 2003.

Thank you again for the time and courtesies you showed to me.

Please come and see me to Japan next in turn.

I want to go back to Australia, ISS 2003!!

Erina

Dear Dr Nicholls,

Again, I would like to extend my sincerest thanks for giving me the opportunity of attending the International Science School 2003. It has been a wonderful experience, and one I will not forget. Hopefully I will be able to attend again in two years, as staff.

Firstly, I have 'somehow' come into possession of the Evaluation Form. I will mail it down to you as soon as I can.

Also, I am writing this E-mail to express my interest in purchasing a copy of the DVD, if it is not too late.

Once again, thank you.

Ian Thomas Garrad

Kia Ora

This is Hester Goodwin, I received your e-mail about a report on my experience at ISS 2003.

Added is an attachment with this report on it I hope that this is what you are looking for. I would like to thank you Jenny and all of the other organisers for setting up ISS 2003, it changed my life and has made me a better person because of it, Thank-you.

Arohanui

Hester Goodwin

P.S if the attachment is unreadable, e-mail me back and I will send it to you by mail.

(Report is given in Appendix E.)

Dear Bob

Many thanks for your letter of 4 August, and kind words about my contribution to the 32nd Professor Harry Messel International Science School.

For myself, it was a great honour to have been able to take part in the lecture program, and in some of the social events too. I felt that the overall standard of the Science School was outstanding: the whole event ran incredibly smoothly, and the students obviously gained a great deal in educational terms and in getting a keen insight into the inspirational environment that the university offers. There are clearly some very bright students out there, and it would gratifying indeed to see a good proportion of them return to Sydney for future studies.

If I can assist with any International Science Schools in future, I would be more than happy to do so. Thank you again, and also to Jenny, for the opportunity to contribute to this year's Science School.

Best wishes, Chris [Dickman, Lecturer]

To Jenny Nicholls

Hello this is Shawn Columbus and i am just sending this little email to thank you for organising ISS.

I had an absolute blast and have made many good and hopefully long term friendships. I am hoping to attend the next ISS as a staffie.

Since returning from ISS i haven't exactly had the best luck, but nothing can dampin the fun that ISS gave me.

Thanks again for the great job you did in getting ISS2003 to be teh success that it was

Shawn Columbus

Dear Jenny,

Thank you for your sending me the DVD.

I enjoyed watching it very much.

I had a very good time at ISS.

The pleasant memories rushed into my mind.

I hope to see you and them again.

Azusa Naito

Hi Dr Nicholls,

I am Shannon He, one of the ISS 2003 Scholars. Many many thanks for your work put into organising the DVD for us! It was great watching it and reliving the many memories I had in those two wonderful weeks!

Have a good day!

Regards,
Shannon

Dear Jenny,

Thanks for sending Warren the ISS2003 DVD. He's seen it a couple of times - with the remote controller on to pause to tell us who the various people were and what the experiments were about. The rest of us have seen it without him in the room + without the remote control being used!

Please extend a special 'thank you' Dubi and Alison our appreciation for their mega-effort.

Once again, the Oakes family thanks to you and all at the School of Physics + the sponsors of the ISS2003 for the opportunity given to Warren.

Regards

Bev Oakes [mother]

Kia Ora Jenny

This is Hester Goodwin. I attended the 2003 ISS and enjoyed it very much. I am e-mailing you to let you know how things are going in my very busy life. I am on the verge of starting university at The University of Auckland, and is very tense about the whole situation! I am not one to organise ahead of schedule so i am doing the last dash now trying to get everything in order before i go away! I am doing a conjoint degree in Law and Science where i am majoring in Chemistry. The television programme CSI (i do not know if Australia recieves this) and also the ISS murder case which involved dead matter inspired me to take both of my degrees and go into forensics in my future. I am excited about this up coming year and would like to thank you for the oppurtunity that ISS was to open up my eyes to the wider world of Science.

I received in the mail an invitation to the 50th Anniversary of The Science Foundation for Physics, i am sorry to say but due to my obligations to University i am unable to attend this cellebration. I would have loved to be able to attend.

Thank you for the invitation and i will keep you informed on how life slowly ticks over for me.

Yours sincerely

Hester Goodwin
ISS 2003 member

Appendix E

Hester Goodwin's Report

32nd Harry Messel International Science School

Recently I attended the 32nd International Science School (ISS) held in Sydney. This programme gathered 140 students from all over the world every two years to experience two weeks of first class scientific knowledge from some of the leading scientists of our world today. It was a very rewarding experience that enlightened me, interested me, and entertained me in many various ways.

The students were from the countries of Malaysia, Japan, England, The United States, Thailand, Singapore, New Zealand and Australia. The requirements for entry into ISS varied from country to country, but in the end all 140 students, were alike in more ways than one, which was the key to the environment which was made in both the educational and social side of ISS.

I arrived later than expected, due to the once-in-a-lifetime snowfall Hawkes Bay received on the night I initially planned to leave New Zealand territory, but nevertheless I did arrive safely on the 6th of July. I arrived at St Johns College, one of Sydney university's halls of residence, where our accommodation was set for the two weeks. It was an early night for all of the students whom decided to rest up for the two weeks ahead.

The opening ceremony was very important as the Governor General of NSW attended and so did the founder of the Science school itself, Mr Harry Messel. Besides this, the first full day at the Science School was just an insight into the Sydney University and what we had ahead of us in the following two weeks. All of the 140 students were separated into smaller groups with approximately 23 students in each. These groups were the backbone to our experience, although we 'mingled' with everyone, these 23 students were whom we spent the majority of our time with, and everybody felt great dignity in their own group.

For the rest of the week though it was more interactive. Our day began at 8.30am, and usually finished at 5.30pm. Lectures, presentations and practical activities filled the days. The lecturers were world renowned and professionals in their own leagues, these lectures varied from astronomy to marsupials. I knew next to none of the lecturers, and this made me realize just how little I actually knew about the science world. The practical activities were activities in which we could relate to everyday life, we had the opportunity to use some of the university's equipment, these varied also from microscopes, to a murder case, to GPS (global positioning system) training, to Statistical calculator work. All of these Lectures and Practical activities did not concentrate on one 'slice' of science but it varied from biology, Chemistry, Physics and Earth science. This was the usual weekday during the two weeks that I attended. On the Thursday of the first week we all took part in an engineering challenge, we were separated into smaller groups and the group which I was placed in competed in the 'Gold Rush' challenge. All of the activities had some scientific base. In our activity our challenge was to build a bridge from minimal resources that had to hold different amounts of weights. It was challenging but fun at the same time.

All of the lectures were broadcasted over the Internet, this was a trial run that worked very successfully, and a camera was always around as a DVD was being shot over the entire two weeks, for promotional purposes. Many of the students purchased these as memorabilia, for a price of course.

After each day several activities were organized. I took part in most of these. In the first week I went on the 'Night Prowl', this allowed most of the international students to take a close look at the wild life of Australia. Another experience was a trip to the IMAX theatre, which is like a 3D version of a movie theatre. There was a wide range of other activities which I attended such as rock climbing, aquarium visit, Sydney sky tower tour etc.

The one full weekend that I spent in Sydney was an experience of a lifetime. On the Saturday I went in the middle of Sydney and to the markets, and to one of there many malls. That night we attended a harbour cruise; this was attended by all of the ISS students. It was on a two story boat, and we went under the Sydney Harbour Bridge, and alongside the Sydney Opera House, in and around the Sydney Harbour and its many coves. On the Sunday, I did the one thing I really wanted to do and promised my friends in New Zealand I would do, I climbed the Sydney Harbour Bridge. It took an amazing three hours but no-one on the trip noticed the time, because it just flew by!

On the last day we had a mini-presentation where several different awards were given out, I was the recipient of one of the enthusiasm awards. That night was the formal dinner, which the sponsors, organizers, lecturers, and the students attended. This was the last time all of the 140 students would ever be in the one room at once, so we cherished it a lot.

When I left Sydney on the 19th, I had made many friends, from all corners of the world, learnt a lot of information, and enjoyed myself very much. On a whole, this experience changed my life; I now have an outlook on what I could possibly study when I move onto Tertiary study. It has opened my eyes to many aspects of the scientific world that I did not previously have an interest in. It was a once-in-a-lifetime opportunity and I would recommend it to anyone, and everyone. I would like to thank everyone, whom assisted me in making this an experience I will never forget, it was very much appreciated, in more ways than one.

Hester Goodwin
St Joseph's Maori Girls College

Appendix F

Publicity Report from Splash PR