Commitment to Teaching

Introduction

The School has a significant commitment to postgraduate training. In 2001 we had a total of 81 PhD students, including continuing students and those completing their thesis. A total of 22 postgraduate students (including 2 MPhil students) commenced their program of study during the year, seven of those being women.

The School, in co-operation with the ANU Graduate School, organised various activities aimed at assisting postgraduate students and broadening their education. An introductory seminar for new students was provided and various tours of the School facilities and the Department of Physics, The Faculties, were conducted. The students also met at several social functions.

Several student prizes were presented at Founder’s Day on 12th October:

The Jagadishwar Mahanty Prize, awarded biennially for the best PhD thesis: The winner was Marcus Kohonen of the Department of Applied Mathematics for his thesis entitled “Experiments on Capillary Condensation”.

The Director’s Award, for the most outstanding published research paper by a PhD student over the last year: The winner was Annette Berriman of the Department of Nuclear Physics, for her paper entitled “Unexpected Inhibition of Fusion in Nucleus-Nucleus Collisions” in Nature 413 (2001) 144-147.

The Graduate Program in Physical Sciences ran a seminar competition for the eighth year. Eleven talks were presented by postgraduates from this School and The Faculties, with the sessions chaired by the Graduate Convenor. The winners were announced at the conclusion of the program and the prizes were presented at Founder’s Day.

The winner of the John Carver Prize for best talk at the Graduate Student Seminar Series was:
Scott Collis, Plasma Research Laboratory, for his talk entitled “Density Studies in H-1NF at 1/2 Tesla”.

Winner of the Director’s Prize was:
Ira Cooke, Department of Applied Mathematics, for his talk entitled “Folding of Co-polymers”

Winner of the Dean’s Prize was:
Cameron Fletcher, Department of Physics, The Faculties, for his talk entitled “Bose-Einstein Condensation”.

The School also makes a significant contribution to undergraduate education by offering a broad range of courses to enrich the undergraduate teaching program. These courses are offered in The Faculties, in the Physics, Engineering and Chemistry Departments. Also, to provide wider opportunities for ANU undergraduates at research level, the School has in recent years offered honours projects and many undergraduates have taken up this opportunity. The School supports this program by offering honours year scholarships of which there were three in the current year. It was also pleasing to note that five students who held either vacation scholarships, honours scholarships or were visiting scholars in 2000 have continued and enrolled as PhD students in the School in 2001.

An increasing number of international and interstate undergraduate and postgraduate scholars, 38 and 21, respectively, spent three months to one year in various departments for the purpose of training and research in 2001.
Commitment to Teaching

Degrees Awarded and Destinations

This list includes all students who have graduated (Dr) or completed all requirements to meet the Degree for either PhD or MSc.

**Applied Mathematics**

Markus Kohonen  
Thesis: *Experiments on Capillary Condensation*  
Currently: Ulm University, Germany

Nobuo Maeda  
Thesis: *Phase Transitions of Long-chain n-alkanes at Interfaces*  
Currently: University of California, Santa Barbara, USA

Ying Qiao  
Thesis: *On Adsorption, Wetting & Capillary Condensations*  
Currently: Max Planck Institut für Metallforschung, Germany

Mario Ramos (Department of Forestry, The Faculties)  
MSc Thesis: *Improving the Gluing of Eucalypt Timber by Plasma Modification of Wood Surfaces*

Dr Marek Schmidt (jointly with EME)  
Thesis: *Phase Formation and Structural Transformation of Strontium Ferrite SrFeO*  
Currently: ISIS, part of the Rutherford-Appleton Laboratory, Oxford, UK

**Atomic and Molecular Physics Laboratories**

Mohammed Arifin (jointly with TP)  
MSc Thesis: *Calculation of Two-electron Photoionization of Metastable Helium using the Convergent Close-coupling Method*  
Currently: Indonesia University of Education

Dr Andrew Elliott  
Thesis: *Electron-impact Ionization Studies of Laser-excited Atoms*  
Currently: University of Oklahoma, USA

**Electronic Materials Engineering**

Dr Sanju Deenapanray  
Thesis: *Atomic Relocation Processes in Semiconductor Materials*  
Currently: ARC Postdoctoral Fellow, ANU

Annette Dowd  
Thesis: *Nonlinear Optical Properties of Germanium Implanted Silica*  
Currently: Cavendish Laboratory, Cambridge, UK

Lan Fu  
Thesis: *Quantum Well Intermixing in (In)GaAs/(Al)GaAs Materials and Devices*  
Currently: ANU

Dr Craig Johnson  
Thesis: *Ion Implantation into Silica: Formation of Waveguides and Related Effects*  
Currently: Sandia National Laboratories, USA

Dr Charlene Lobo  
Thesis: *Growth, Structure and Luminescence of Self-assembled III-V Quantum Dots*  
Currently: Cavendish Laboratory, Cambridge, UK
Dr Marek Schmidt (jointly with AM)
Thesis: Phase Formation and Structural Transformation of Strontium Ferrite SrFeO₃
Currently: ISIS, part of the Rutherford-Appleton Laboratory, Oxford, UK

Dr Xianfang Zhu
Thesis: Nanostructures and their Metastabilities in Silicon Induced by Ion Bombardment
Currently: University of Illinois at Urbana-Champaign, USA

Laser Physics Centre

Dr Andrew Greentree
Thesis: Subharmonic Resonances in a Polychromatically Driven Two Level System
Currently: Graduate Open University, UK

Plasma Research Laboratory

Dr Rex Bean
Thesis: Plasma Treatment of Wool

Theoretical Physics

Mohammad Arifin (jointly with AMPL)
MSc Thesis: Calculation of Two-electron Photoionization of Metastable Helium Using the Convergent Close-Coupling Method
Currently: Indonesia University of Education

Dr Sylvia Sutanto
Thesis: Relativistic Wave Equations, Compton Scattering & Hydrogenic Atoms
Currently: Parahyangan Catholic University, Bandung, Indonesia

Dr Paulus Tjiang
Thesis: Gauge Covariance and Fermion-Photon Vertex in Massless Quantum Electrodynamics
Currently: Parahyangan Catholic University, Bandung, Indonesia
Postgraduate Students

Sources of Funding:
ADFA Australian Defence Force Academy
ANUPS Australian National University Postgraduate Scholarship
ANUPTS Australian National University Postgraduate and Tuition Fee Scholarship
APA Australian Postgraduate Award
APA(I) Australian Postgraduate Award (Industry)
CRC Cooperative Research Centre
CSIRO Supported by the Commonwealth Scientific & Industrial Research Organisation
GSS Graduate School Scholarship
OPRS Overseas Postgraduate Research Scholarship
SPIRT ARC SPIRT Grant
RMIT Royal Melbourne Institute of Technology
VC Vice Chancellor’s Supplementary Scholarship
WS RSPhysSE Supplementary Scholarship for Women

The lists include first year students who were not enrolled for the full year and continuing students who have not yet graduated.

Applied Mathematics
Mr Ira Cooke, BSc JCU, APA
Ms Lydia Knüfing, BSc Wuppertal, ANUPTS (from October)
Mr Ray Roberts, BSc, CRC (from September)
Mr Mohammad Saadatfar, BSc Mazandaran MSc IASBS, ANUPTS (from October)
Mr Gerd Schröder, Dipl Phys Cologne, ANUPS/OPRS (from February)

Atomic and Molecular Physics Laboratories
Mr Max Colla, MSc Pisa, OPRS/ANUPS (jointly with LPC)
Mr Robert G. Dall, BSc Qld, APA (jointly with LPC)
Ms Vanessa Leung, BSc Massey, GSS (jointly with LPC)
Mr Edward H. Roberts, BE BSc NSW, MBA Deak, APA
Mr James A. Swansson, BA MSc Melb, APA (jointly with LPC)
Ms Linda J. Uhlmann, BAppSci CQld, APA
Ms Kylie Waring, BSc Mon, APA (jointly with LPC)

Director’s Unit
Mr Tristram Alexander, BSc Darwin, APA
Ms Sam Ashby, BSc Sydney, APA(I)/ADC Telecommunications Australia Pty Ltd
Ms Vicky Au, BA BSc Melb, ANUPS (jointly with PRL) (from August)
Mr Keith Gaff, BSc Mon, APA(I)/ADC Telecommunications Australia Pty Ltd (jointly with PRL) (until May)
Ms Ruth Jarvis, BE BSc, APA(I)/Siemens Ltd
Ms Pearl Louis, BSc, ANUPS (jointly with TP) (from April)
Mr Nick Robins, BSc, ANUPS (until August)
Mr Andrey Sukhorukov, BSc MSc, OPRS/ANUPS
Ms Snjezana Tomljenovic-Hanic, BSc Belgrade, APA(I)/ADC Telecommunications Australia Pty Ltd (jointly with LPC)

Electronic Materials Engineering
Ms Jodie Bradby, BapSc RMIT, APA(I) Australian Scientific Instruments
Mr David Brett, BSc Melb, ANUPS (from February)
Ms Christine Carmody, BSc UNSW, APA/CSIRO
Ms Stephanie Cheylan, BSc MSc Grenoble, ANUPS/OPRS (jointly with LPC)
Mr Michael Cohen, BEng UQ, APA
Mr Michael Gao, BE ME Northeastern University, PRC, IPRS/ANUPS
Mr Chris Glover, BSc Newcastle, ANUPS
Ms Jillian Hay, BE Canterbury, ANUPS
Mr Ali Khalil, BSc MSc Cairo, ANUPS (from June)
Mr Sergei Kucheyev, MPH St. Petersburg, OPRS/ANU
Ms Penelope Lever, BE Canterbury, ANUPS
Mr Nat Smith, BSc, ANUPS (from August)
Mr Marc Spooner, BSc Ottawa, MSc Western Ontario, ANUPS (from October)
Ms Tessica Weijers, BSc BA pSc QUT, APA/VC/WS (jointly with NArcété)

Laser Physics Centre

Ms Stephanie Cheylan, BSc MSc Grenoble, ANUPS/OPRS (jointly with EME)
Mr Max Colla, BSc Pisa, OPRS/ANUPS (jointly with AMPL)
Mr Roger Dall, BSc CQLD, APA (jointly with AMPL)
Mr Tim Dyke, BSc Monash, APA
Mr Elliot Fraval, BE BSc UC, ANUPS (from January)
Ms Vesselin Kolev, Eng-Phys Plovdiv, GSS
Ms Vanessa Leung, BSc Massey, ANUPS (jointly with AMPL)
Mr Jeff Longdell, BSc Waikato, MSc Auck, ANUPS
Mr Glenn McCarthy, BSc MSc UNSW, ANUPS
Mr Joseph Morrell, BSc, ANUPS (from July)
Ms Eleni Notaras, BA BSc, Redfern Polymer Optics (from September)
Mr Syed Quddus, MSc MPhil Pakistan, ANUPS (from October)
Ms Yinlan Ruan, BSc MSc HUST China, ANUPS (from May)
Mr Darryl Scott, BSc Wollongong, ANUPS
Mr James Swanson, BA BSc MSc Melb, APA (jointly with AMPL)
Ms Snejana Tomljenovic–Hanic, BSc Belgrade, APA(I)/ADC Telecommunications Australia Pty Ltd (jointly with DU)
Ms Kylie Waring, BSc Monash, APA (jointly with AMPL)
Ms Elena Wilson, BSc Vitebsk State, ANUPS
Mr Andrew Windsor, BSc Adelaide, APA

Nuclear Physics

Ms Annette Berriman, BSc, Grad Dip, APA
Ms Rachel Butt, BSc, APA/VC
Ms Jodie Evans, BSc, ANUPS (jointly with RSES) (until July)
Ms Judith Hazel, BSc DipSci MSc Otago, ANUPS
Mr Michael Jennings, BSc MSc Otago, ANU(RSPSE) (from April)
Mr Tom McGorum, BSc MSc Auckland, APA
Mr Martyn Robinson, BSc Surrey, ANUPS
Ms Tessica Weijers, BSc BA pSc QUT, APA/VC/WS (jointly with EME)

Theoretical Physics

Mr Yung-Kai Chan, BSc, (self-funded)
Mr Geoffrey Erickson, BSc Qld, ANUPS
Mr Ben Corry, BSc, APA
Mr Anthony Hibberd, BSc Qld, APA (until August)
Mr Heinz Horn, BSc Qld, ANUPS
Mr Alexei Khorev, DipPhys Moscow PTI, OPRS/ANUPS (until August)
Ms Sally Lloyd, BSc Murdoch, APA
Ms Pearl Louis BSc, ANUPS (jointly with DU) (from April)
Mr Ian McCulloch, BSc Tasm, APA (until November)
Mr Ben McMillan, BSc Melb, APA (jointly with PRL) (from February)
Ms Meera Parish, BSc, GSS/Malcolm McIntosh Prize/WS (from March)

Plasma Research Laboratory

Ms Vicky Au, BA BSc Melb, ANUPS (jointly with DU) (from August)
Mr Scott Collis, BSc Syd, ANUPS
Mr James Constable, BE, ANU (from April)
Mr Fenton Glass, BSc Qld, ANUPS
Mr Rhys Hawkins, BE BIT, ANUPS
Mr Peter Linardakis, BSc, APA (from April)
Mr Liviu Lungu, MSc Polytechnic University, Bucharest, SPIRT
Mr Ben McMillan, BSc Melb, APA (jointly with TP) (from February)
Mr Clive Michael, BSc, APA

Mr David Pretty, BSc Melb, ANUPS (from February)
Mr Horst Punzmann, BSc Polytech Regensburg, ANUPS
Mr Wayne Solomon, BSc Qld, APA
Mr Orson Sutherland, BE, APA
Mr John Wach, BAppSc BCAE, GradDipElect CCAE, (self-funded)
Ms Hua Xia, MSc Chongqing, ANUPTS (from June)
Honours Students

The following students were enrolled in Honours or final year undergraduate course.

Drew Evans Chemistry AM
Michael Turner* Geography AM
Joanne Harrison* Physics AMPL
Christoph Puetter Physics (3rd Year student) AMPL
Adrian Cheung Engineering EME
Timothy Walsh* Physics EME
Andrew Wilkinson Engineering EME
Ben Cornish Engineering and Information Technology LPC
David Mitchell Physics NP
Gabrielle Le Cornu Engineering and Information Technology PRL
Sara Passer Engineering and Information Technology PRL
David McCluneghan Engineering and Information Technology PRL
John Ringland Physics and Theoretical Physics TP

* received a RSPhysSE Honours Scholarship

Summer/Winter Scholars

The following students spent periods of up to twelve weeks in the Research School from December 2001 to February 2002:

Summer Scholars

Ms Annabel Alexander Australian National University AM
Mr Toen Castle University of New England AM
Mr Drew Evans Australian National University AM
Ms Edith Hamilton Australian National University AM
Mr David Oliver University of Wollongong AM
Mr Nan Ye Australian National University AM
Mr Gregory Jolley Northern Territory University AMPL
Ms Carolyn Miers University of Waikato, NZ CIM
Ms Anne Barnett University of Canterbury, NZ EME
Mr Adrian Cheung Australian National University EME
Ms Victoria Coleman Flinders University EME
Mr Sachin Doshi Australian National University EME
Mr Matthew Duggan Australian National University EME
Mr Darren Freeman Flinders University LPC
Mr Lodi van Dyke Australian National University NP
Mr Chi Tak Chung Australian National University PRL
Mr Tarek Helmy Australian National University PRL
Mr Benjamin Heslop Australian National University PRL
Ms Demelza Kurylowicz Australian National University PRL
Mr Roy Lam Australian National University PRL
Mr Liang Tai Australian National University PRL
Mr Jeta Vedi Australian National University PRL
Ms Annie Wang University of WA PRL
Mr Philip Brydon Australian National University TP
Ms Taira Vora Australian National University TP

The students toured the School and the Department of Physics and Theoretical Physics in The Faculties, and gave short presentations on the projects they had undertaken at a seminar held at the end of their stay.

Winter Scholars

Mr Drew Evans Australian National University AM
Mr Adrian Cheung Australian National University EME
Mr Michael Fraser Griffith University EME
Ms Mushtari Afroz University of Queensland PRL
Mr Chi Tak Chung Australian National University PRL
Mr Jeta Vedi Australian National University PRL
Commitment to Teaching

Visiting Scholars

The following undergraduate and postgraduate scholars spent time in the School for the purpose of training and research:

Christoph Arns UNSW AM
Elmar Bonaccurso Siegen University, Germany AM
Kjetil Djurhuus University of Bergen, Norway AM
Ji Youn Lee Arns UNSW AM
Jianhua Liu UNSW AM
Michael Schwertner Leipzig University, Germany AM
Lehoa Scruton Australian National University AM
Ahmad Teymoori UNSW AM
Connie Höhr Max Planck Institute for Nuclear Physics, Germany AMPL
Erik Van Ooijen University of Utrecht, The Netherlands AMPL/LPC
Brant Gibson La Trobe University DU
Andreas Johansson Chalmers University of Technology, Sweden DU
Patrik Johansson Chalmers University of Technology, Sweden DU
Jim Katsifolis La Trobe University DU
Kristian Motzek Darmstadt University of Technology, Germany DU
Satoru Shoji Osaka University, Japan DU
Benedikt Hecking University of Bonn, Germany EME/NP
Tanja Dessauvagie University of Bonn, Germany EME/NP
Arnaud Martin Ecole Polytechnique, France EME
Twan van Lippen University of Technology, Eindhoven, The Netherlands EME
Juan Uriabisterra Lunds, Tekniska Högskola, Sweden EME
Swetha Veerapanane Torney Pines High School, USA EME
Ben Williams Australian National University EME
Mathias Hildebrandt Fachhochschule Ostfriesland, Germany LPC
Bronwen Taylor Macquarie University LPC
Annabel Alexander Department of Physics, Australian National University NP
Nick Ashwood University of Birmingham, UK NP
Elizabeth Barnes University of Wollongong NP
Abdurrahman Ceylan University of Wollongong NP
Patrick Cherry Manchester University, UK NP
Michael Currie University of Wollongong NP
Julian Drake-Brockman University of Wollongong NP
Hasna El-Masri University of Surrey, UK NP
Barrie Greenhalgh University of York, UK NP
Darren Groombridge University of York, UK NP
Clare Harrison University of York, UK NP
Dean Inwood University of Wollongong NP
Carl Metelko University of Birmingham, UK NP
Tamara Molloy University of Wollongong NP
Andrew Moylan Department of Physics, Australian National University NP
Adrian Mozejko University of Wollongong NP
Bradley Oborn University of Wollongong NP
Nicolas Orce-Gonzalez University of Brighton, UK NP
Matt Owes University of Wollongong NP
Steven Pain University of Birmingham, UK NP
Jonathan Pearson University of York, UK NP
Francisco Prados University of Brighton, UK NP
Dale Prokapovich University of Wollongong NP
Michael Smith University of Wollongong NP
Nevin (Soya) Soic Department of Physics, Australian National University NP
Simon Turner University of Wollongong NP
Taira Vora Department of Physics, Australian National University NP
Russell Wood University of Surrey, UK NP
Andrew Wroe University of Wollongong NP
Ane Aanesland Tromso, Norway PRL
Greg Alcott Eindhoven Technical University, The Netherlands PRL
Andreas Danielsson Chalmers University of Technology, Sweden PRL
Oliver Gall Ecole Polytechnique, France PRL
Mark Hirsch Fachhochschule Kempten, Germany PRL

The following students, from local high schools and colleges, visited the School for work experience:

Daniel Chubb CSIRO Student Research Scheme NP
Tracy Slacher Narrabundah College, IB Scheme NP
**Science Schools**

**The Australian Photonics School**

The Australian Photonics School was organised by Professor J.D. Love from the DU and held at the Australian Technology Park, Sydney, 28-30 June, under the auspices of the Australian Photonics CRC. The event included lectures and hands-on activities and attracted 56 delegates from academia, government and industry, including 11 from overseas. Lectures were provided by a number of photonics and legal experts from within Australia and from overseas.

**Siemens Science and Engineering Experience**

The 2001 Siemens Science and Engineering Experience, ANU, for Students entering Year 10 in 2002 was directed by Professor J.D. Love and received managerial support from the Centre for Continuing Education. The event was held from 3-5 October and attracted 86 students from the ACT and country NSW. Members of the School who helped with the presentation of lectures included Dr Tim Thompson, Dr M. Sellars and Professor J.D. Love.

**Mini Summer School in Plasma Physics**

The Australian National University Centre for Theoretical Physics hosted a Mini Summer School in Plasma Physics between 29 January and 2 February, 2001.

Plasma physics underlies much of our understanding of stellar and galactic structure; it determines the magnetospheric environment of the earth and other planets; it forms the research frontier in areas such as nuclear fusion, advanced accelerators and high frequency lasers and is being increasingly used in industry - notably in the fabrication of computer chips. This course emphasised the intrinsic scientific interest of the plasma state of matter and attempted to develop an understanding on plasma behavior in a thorough and systematic fashion.

**Biophysics Summer School**

The Australian National University Centre for Theoretical Physics also hosted a Summer School entitled Biophysics: From Proteins to Cells between January 15 and 26, 2001 addressing physical perspectives on the emerging molecular structure of biosystems.