

## Section 2

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# Introduction

The Australian Institute of Nuclear Science and Engineering (AINSE) was established in 1958 to provide a mechanism for access to the special facilities at Lucas Heights by universities and other tertiary institutions and to provide a focus for cooperation in the nuclear scientific and engineering fields. It has a specific mandate to arrange for the training of scientific research workers and the award of scientific research studentships in matters associated with nuclear science and engineering.

Today nuclear science at the Lucas Heights Science and Technology Centre is devoted to supporting activities and research in a wide range of disciplines. These have applications in advanced technology, manufacturing, mining, agriculture, medicine and environmental protection. All are of vital importance to Australia's future. Many of the techniques and much of the expertise at Lucas Heights cannot be found elsewhere in Australia.

AINSE plays an indispensable role in providing universities with access to major scientific facilities and encouraging a national cooperative research effort. It is a role that is conducted both efficiently and cost effectively. Universities are saved from duplicating expensive items of equipment and Commonwealth funding can be directed at one national facility instead of several with sub-critical funding.

## Mission

AINSE will advance research, education and training in the field of nuclear science and engineering and related fields within Australasia by being, in particular, the key link between universities, ANSTO, other member organisations and major nuclear science and associated facilities.

## Goals

To achieve this vision AINSE will implement strategies in the following key areas:

- access to major facilities
- scientific outcomes
- membership
- networking

We will know that we have achieved this vision when the following goals are attained:

- **Goal 1**  
By the end of 2008 members will have access to the Australian major nuclear and related research facilities and some overseas, through AINSE.
- **Goal 2**  
By the end of 2008 the research performance of our scientific outcomes will have increased substantially.
- **Goal 3**  
By the end of 2008 all universities in Australasia, some sections of CSIRO, many major museums, many non teaching hospitals and a significant proportion of the scientific institutes in Australasia will be members of AINSE.
- **Goal 4**  
By the end of 2008, we will have expanded AINSE's existing set of excellent scientific networks.

## Contact AINSE

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Australia

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[ainse@ansto.gov.au](mailto:ainse@ansto.gov.au)

### Homepage

[www.ainse.edu.au](http://www.ainse.edu.au)

### Executive Secretary

Dr Dennis Mather

# AINSE Council 2007

## Member Organisations and Representation

2 Council Meetings were held in 2007

| Organisation                                  | Membership Commenced       | Councillor                            | Meetings Attended |
|---|----------------------------|---------------------------------------|-------------------|
| ANSTO CEO                                     | 1958                       | Dr Ian Smith                          | 2                 |
| ANSTO, Chief of Research                      |                            | Dr George Collins                     | 2                 |
| ANSTO, Bragg Institute                        |                            | Dr Robert Robinson                    | 2                 |
| ANSTO, Institute for Environmental Research   |                            | Professor John Dodson                 | 1                 |
| ANSTO, Institute for Materials Engineering    |                            | Professor Lyndon Edwards              | 2                 |
| ANSTO, Radiopharmaceutical Research Institute |                            | Dr Ron Weiner                         | 1                 |
| The University of Queensland                  | 1958                       | Professor Anton Middelburg            | 2                 |
| The University of New England                 | 1958                       | Dr Peter Flood                        | 1                 |
| The University of Sydney                      | 1958                       | A/Professor Brendan Kennedy           | 2                 |
| The University of New South Wales             | 1958                       | Professor Rob Burford                 | 2                 |
| The Australian National University            | 1958                       | Professor John White                  | 2                 |
| The University of Melbourne                   | 1958                       | Professor Jim Camakaris               | 2                 |
| University of Tasmania                        | 1958                       | Professor Allan Canty                 | 1                 |
| The University of Adelaide                    | 1958                       | A/Professor Gerald Laurence           | 2                 |
| The University of Western Australia           | 1958                       | Dr Jasmine Henry                      | 2                 |
| Monash University                             | 1962                       | Professor Rob Norris                  | 2                 |
| The University of Newcastle                   | 1965                       | A/Professor Bruce King                | 2                 |
| Flinders University of SA                     | 1966                       | Dr Michael Brunger                    | 2                 |
| La Trobe University                           | 1967                       | Dr John Webb                          | 1                 |
| Macquarie University                          | 1967                       | Professor James Piper                 | 1                 |
| James Cook University                         | 1970                       | Professor Richard Keene               | 2                 |
| University of Wollongong                      | 1975                       | Professor Allan Chivas                | 1                 |
| Griffith University                           | 1975                       | Professor Greg Hope                   | 2                 |
| Murdoch University                            | 1985-1997<br>rejoined 1998 | Professor James Reynoldson            | 0                 |
| University of Technology, Sydney              | 1988                       | Professor Greg Skilbeck               | 1                 |
| RMIT University                               | 1988                       | Professor Peter Johnston              | 2                 |
| Curtin University of Technology               | 1989                       | E/Professor Brian O'Connor, President | 1                 |
| Central Queensland University                 | 1991                       | Dr David Druskovich                   | 2                 |
| University of South Australia                 | 1991                       | Dr Namita Choudhury                   | 2                 |
| Swinburne University of Technology            | 1991                       | Dr Anthony Bartel                     | 2                 |
| Queensland University of Technology           | 1992                       | A/Professor Ray Frost                 | 0                 |
| University of Western Sydney                  | 1993                       | Dr Robyn Crumbie                      | 1                 |
|   |                            | Professor Andrew Cheetham             | 1                 |
| Victoria University                           | 1994                       | Professor Michelle Towstoless         | 2                 |
| Southern Cross University                     | 1994                       | A/Professor Bill Boyd                 | 2                 |
| The University of Auckland                    | 1995                       | Professor Jim Metson                  | 2                 |

|   |      |                             |   |
|---|------|-----------------------------|---|
| Charles Sturt University                | 1995 | Dr Paul Prenzler            | 1 |
| Charles Darwin University               | 1995 | A/Professor David Parry     | 1 |
| Edith Cowan University                  | 1996 | Professor Patrick Garnett   | 0 |
| University of Canberra                  | 1996 | Professor Bill Maher        | 2 |
| The University of Southern Queensland   | 1996 | Professor Graham Baker      | 0 |
| Deakin University                       | 1997 | Professor David Stokes      | 0 |
| University of Ballarat                  | 1997 | Mr Stafford McKnight        | 1 |
| Australian Catholic University          | 2001 | Dr Brian Bicknell           | 2 |
| GNS Science                             | 2004 | Dr Frank Bruhn              | 2 |
| University of Canterbury                | 2004 | Dr Stephen Durbin           | 0 |
| University of Otago                     | 2007 | Professor Glenn Summerhayes | 0 |
| Secretary to AINSE Council (non-voting) |      | Dr Dennis Mather, AINSE     | 2 |

#### Alternate Representatives and other attendees

|                                 |                            |                         |   |
|---------------------------------|----------------------------|-------------------------|---|
| Edith Cowan University          | 1996                       | Dr Stephen Hinckley     | 2 |
| Macquarie University            | 1966                       | A/Professor Damian Gore | 2 |
| Murdoch University              | 1985-1997<br>rejoined 1998 | Dr Igor Bray            | 1 |
| Curtin University of Technology | 1989                       | Dr Annemieke Mulders    | 1 |

## Executive Committee

Four Executive Committee Meetings were held in 2007

| Councillor                 | Office/Position  | Organisation                       | Meetings Attended |
|----------------------------|------------------|------------------------------------|-------------------|
| E/Professor Brian O'Connor | President        | Curtin University of Technology    | 3                 |
| Professor John White       | Past -President  | The Australian National University | 4                 |
| Professor Allan Chivas     | Vice - President | University of Wollongong           | 3                 |
| A/Professor Bruce King     |                  | University of Newcastle            | 3                 |
| Dr Ian Smith               |                  | ANSTO                              | 3                 |
| Dr Robert Robinson         |                  | ANSTO                              | 2                 |
| Dr George Collins          |                  | ANSTO                              | 4                 |
| Professor Lyndon Edwards   |                  | ANSTO                              | 2                 |
| Dr Dennis Mather           |                  | AINSE                              | 4                 |

## AINSE Staff

Executive Secretary     Dr Dennis Mather

#### Secretariat

|                                   |                   |
|-----------------------------------|-------------------|
| Miss Rhiannon Still               |                   |
| Ms Gillian Blackburn              | from 2 April 2007 |
| Mrs Sandy O'Connor (part-time)    |                   |
| Mrs Nerissa Phillips (part-time)  |                   |
| Mr John Studert (part - time)     |                   |
| Ms Elisabeth Meijer (part - time) | Until 26 Feb 2007 |

# Specialist Committees for 2007

The Executive Secretary, AINSE, is an ex-officio (non-voting) member of all Committees. Committees meet in May and in October.  
(a) indicates 'alternate' (c) indicates councillor

|   |                                     | Meetings<br>Attended |
|---|-------------------------------------|----------------------|
| <b>Archaeology and Geosciences Committee</b>                        |                                     |                      |
| Professor Patrick De Deckker, Convenor                              | The Australian National University  | 2                    |
| Dr Peter White  | University of Sydney                | 2                    |
| Dr David Garnett  | Charles Darwin University           | 1                    |
| A/Professor James Schulmeister                                      | University of Canterbury            | 2                    |
| Dr Peter Grave (c)  | University of New England           | 1                    |
| Dr Quan Hua   | ANSTO                               | 2                    |
| Dr David Fink   | ANSTO                               | 1                    |
| Dr Henk Heijnis   | ANSTO                               | 1                    |
| <b>Biomedical Science and Biotechnology Committee</b>               |                                     |                      |
| Professor James Camakaris, Convenor May (c)                         | University of Melbourne             | 1                    |
| A/Professor Michael Kassiou   | University of Sydney                | 2                    |
| Dr Michael Hay Convenor October                                     | University of Auckland              | 2                    |
| A/Professor Lawrence Gahan  | University of Queensland            | 1                    |
| A/Professor Christopher Rowe  | University of Melbourne             | 1                    |
| Dr Andrew Katsifis  | ANSTO                               | 2                    |
| <b>Environmental Sciences Committee</b>                             |                                     |                      |
| Professor Greg Skilbeck, Convenor (c)                               | University of Technology Sydney     | 2                    |
| Professor Eric Bestland   | Flinders University                 | 2                    |
| Dr Joachim Ribbe  | University of Southern Queensland   | 1                    |
| Professor David Bowman  | Charles Darwin University           | 1                    |
| Dr Andrew Smith   | ANSTO                               | 2                    |
| Dr Suzanne Hollins  | ANSTO                               | 2                    |
| <b>Materials - Structures and Dynamics Committee</b>                |                                     |                      |
| Dr Chris Ling, Convenor   | University of Sydney/ANSTO          | 2                    |
| Professor John White (c)  | Australian National University      | 2                    |
| Professor Stewart Campbell  | ADFA, University of New South Wales | 2                    |
| Dr Michael James  | ANSTO                               | 2                    |
| Professor Jill Trehwella  | University of Sydney/ANSTO          | 1                    |
| Professor Valerie Linton  | University of Adelaide              | 1                    |
| <b>Materials - Materials – Properties and Engineering Committee</b> |                                     |                      |
| Dr Michael Brunger, Convenor  | Flinders University                 | 2                    |
| Dr Rachael Caruso   | University of Melbourne             | 2                    |
| Professor Robert Gilbert  | University of Sydney                | 1                    |
| Dr David Cohen  | ANSTO                               | 2                    |
| Professor Lyndon Edwards  | ANSTO                               | 2                    |
| Dr Kathryn Prince   | ANSTO                               | 1                    |
| <b>Nuclear Power Technology Committee</b>                           |                                     |                      |
| E/Professor Brian O'Connor, Convenor                                | Curtin University of Technology     |                      |
| Prof Peter Johnston   | RMIT                                |                      |
| Dr George Collins   | Chief of Research, ANSTO            |                      |
| Prof Lyndon Edwards   | Head, IME, ANSTO                    |                      |

# Conference Planning Committees

## 15th AINSE Conference on Nuclear and Complementary Techniques of Analysis (NCTA) 21 - 23 November, The University of Melbourne

|                      |                  |                         |
|----------------------|------------------|-------------------------|
| Dr Jeff McCallum     | Conference Chair | University of Melbourne |
| Prof David Jamieson  |                  | University of Melbourne |
| A/Prof Bruce King    |                  | University of Newcastle |
| Dr Andreas Markwitz  |                  | GNS Science             |
| Prof. Rob Elliman    |                  | ANU                     |
| Dr David Cohen       |                  | ANSTO                   |
| Prof. Peter Johnston |                  | RMIT                    |
| Dr Chris Ryan        |                  | CSIRO                   |
| Dr Anthony Holland   |                  | RMIT                    |
| Dr Dennis Mather     |                  | AINSE                   |
| Ms Rhiannon Still    |                  | AINSE                   |

## ANSTO-AINSE Neutron School on Diffraction

29 November - 3 December 2007, Lucas Heights

|                     |  |                          |
|---------------------|--|--------------------------|
| Dr. Herma Büttner   |  | Bragg Institute          |
| Dr. Alison Edwards  |  | Bragg Institute          |
| Prof Gordon Kearley |  | Bragg Institute          |
| Dr. Chris Ling      |  | The University of Sydney |
| Dr. Andrew Studer   |  | ANSTO                    |
| Ms Lauren Mackaway  |  | ANSTO                    |
| Dr. Dennis Mather   |  | AINSE                    |
| Ms Rhiannon Still   |  | AINSE                    |

## 6th AINSE/ANBUG Neutron Scattering Symposium (AANSS) Diffraction and Residual Stress

4 December - 6 December 2007, AINSE

|                    |  |                                 |
|--------------------|--|---------------------------------|
| Dr Chris Ling      |  | University of Sydney            |
| Prof Craig Buckley |  | Curtin University of Technology |
| Dr Daniel Riley    |  | University of Melbourne         |
| Dr Brendan Kennedy |  | University of Sydney            |
| Dr Dennis Mather   |  | AINSE                           |
| Ms Rhiannon Still  |  | AINSE                           |

## Chemical Deuteration Workshop

27 September, AINSE, Lucas Heights

|                   |  |       |
|-------------------|--|-------|
| Dr Peter Holden   |  | ANSTO |
| Dr Dennis Mather  |  | AINSE |
| Ms Rhiannon Still |  | AINSE |



**Australian Institute of Nuclear Science and Engineering Inc.  
Independent Audit Report to the Members  
For the Year 31 December 2007**

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**Report on the Financial Report**

We have audited the accompanying financial report of the Institute which comprises the balance sheet as at 30 June 2007 and the income statement, statement of recognised income and expenditure and cash flow statement for the year ended on that date, a summary of significant accounting policies and other explanatory notes and the statement by members of the Executive Committee.

Executive Committee's Responsibility for the Financial Report

The committee of the Institute are responsible for the preparation and fair presentation of the financial report in accordance with Australian Accounting Standards (including the Australian Accounting Interpretations) and the Associations Incorporation Act, NSW. This responsibility includes establishing and maintaining internal controls relevant to the preparation and fair presentation of the financial report that is free from material misstatement, whether due to fraud or error; selecting and applying appropriate accounting policies; and making accounting estimates that are reasonable in the circumstances.

Auditor's Responsibility

Our responsibility is to express an opinion on the financial report based on our audit. We conducted our audit in accordance with Australian Auditing Standards. These Auditing Standards require that we comply with relevant ethical requirements relating to audit engagements and plan and perform the audit to obtain reasonable assurance whether the financial report is free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial report. The procedures selected depend on the auditor's judgement, including the assessment of the risks of material misstatement of the financial report, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the company's preparation and fair presentation of the financial report in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by the committee, as well as evaluating the overall presentation of the financial report.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Independence

In conducting our audit, we have complied with the independence requirements of Australian professional ethical pronouncements.

Phillip R. Escott F.C.A.

David G. Aston C.A.

Liability limited by a scheme approved  
under Professional Standards Legislation



**Australian Institute of Nuclear Science and Engineering Inc.  
Independent Audit Report to the Members  
For the Year 31 December 2007**

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Auditor's Opinion

In our opinion, the financial report of The Australian Institute of Nuclear Science and Engineering Inc. is in accordance with the Associations Incorporation Act, NSW, including:

- (a) giving a true and fair view of the Association's financial position as at 31 December 2007 and of their performance for the period ended on that date; and
- (b) complying with Australian Accounting Standards (including the Australian Accounting Interpretations) and the Associations Incorporation Act, NSW.

Escott Aston  
Chartered Accountants  
291 Belmore Road  
Riverwood NSW 2210



David G Aston  
Partner

Dated this 1<sup>st</sup> day of April 2008

# Australian Institute of Nuclear Science and Engineering

## Executive Committee's Report

The Executive Committee of the Australian Institute of Nuclear Science and Engineering Incorporated submits the financial accounts of the Institute for the financial year ended 31 December 2007.

### Committee Members

Professor Allan Chivas, President  
A/Professor Bruce King, Vice President  
Professor Peter Johnston  
Dr Ian Smith  
Dr George Collins  
Dr Robert Robinson  
Dr Dennis Mather, Scientific Secretary

### Principal Activities

The Principal activities of the Institute during the financial year were

- To carry out research and investigations in connection with matters associated with nuclear science and engineering;
- To arrange for the training of scientific research workers and the establishment and award of scientific research studentships in matters associated with nuclear science and engineering;
- To collect and distribute information relating to nuclear science and engineering.

### Significant Changes

No significant change in the nature of these activities occurred during the year.

### Operating Result

The surplus for the year amounted to \$239,939.

Signed in accordance with a resolution of the Members of the Committee.



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Dr Dennis Mather  
Public Officer & Executive Secretary  
Dated this first day of April 2008

**Statement by Members of the Executive Committee  
Australian Institute of Nuclear Science and Engineering**

Statement by members of the Executive Committee

For the year ended 31 December 2007

In the opinion of the Executive Committee the financial report as set out in the accompanying pages:

1. Presents a true and fair view of the financial position of the Australian Institute of Nuclear Science and Engineering Incorporated as at 31 December 2007 and its performance for that year ended on that date in accordance with Australian Accounting Standards, mandatory professional reporting requirements and other authoritative pronouncements of the Australian Accounting Standards Board.
2. At the date of this statement, there are reasonable grounds to believe that the Institute will be able to pay its debts as and when they fall due.

This statement is made in accordance with the resolution of the Executive Committee and is signed for and on behalf of the Executive Committee by:

  
.....  
President

  
.....  
Executive Secretary

Dated this first day of April 2008

# Balance Sheet

as at 31 December 2007

|                                      | Notes | 31-Dec-07<br>\$         | 31-Dec-06<br>\$         |
|--------------------------------------|-------|-------------------------|-------------------------|
| <b>Current Assets</b>                |       |                         |                         |
| Cash                                 | 2     | 101,945                 | 57,742                  |
| Trade and Other Receivables          | 3     | 125,527                 | 107,482                 |
| Investments                          | 4     | 2,401,752               | 2,429,697               |
| Other                                | 5     | <u>14,402</u>           | <u>13,611</u>           |
| <b>Total Current Assets</b>          |       | <b>2,643,626</b>        | <b>2,608,532</b>        |
| <b>Non-Current Assets</b>            |       |                         |                         |
| Plant and Equipment                  | 6     | <u>17,667</u>           | <u>30,129</u>           |
| <b>Total Non-Current Assets</b>      |       | <b>17,667</b>           | <b>30,129</b>           |
| <b>Total Assets</b>                  |       | <b>2,661,293</b>        | <b>2,638,661</b>        |
| <b>Current Liabilities</b>           |       |                         |                         |
| Trade and Other Payables             | 7     | <u>555,408</u>          | <u>779,737</u>          |
| <b>Total Current Liabilities</b>     |       | <b>555,408</b>          | <b>779,737</b>          |
| <b>Non-Current Liabilities</b>       |       |                         |                         |
| Provisions for Employee Entitlements | 8     | <u>26,201</u>           | <u>19,179</u>           |
| <b>Total Non-Current Liabilities</b> |       | <b>26,201</b>           | <b>19,179</b>           |
| <b>Total Liabilities</b>             |       | <b>581,609</b>          | <b>798,916</b>          |
| <b>NET ASSETS</b>                    |       | <b><u>2,079,684</u></b> | <b><u>1,839,745</u></b> |
| <b>Equity</b>                        |       |                         |                         |
| Awards Reserve                       | 14    | 3,060,681               | 2,565,000               |
| Long Term Projects Reserve           | 14    | 500,000                 | 500,000                 |
| Accumulated results of operations    |       | (1,480,997)             | (1,225,255)             |
| <b>TOTAL EQUITY</b>                  |       | <b><u>2,079,684</u></b> | <b><u>1,839,745</u></b> |

The accompanying notes form an integral part of these accounts.

# Income and Expenditure Statement

as at 31 December 2007

|   | Notes | 31-Dec-07<br>\$    | 31-Dec-06<br>\$    |
|---|-------|--------------------|--------------------|
| <b>COST OF SERVICES</b>   |       |                    |                    |
| <b>Operating Revenue</b>  |       |                    |                    |
| Payments from members   |       | 2,664,807          | 2,483,275          |
| External Grants   | 11    | -                  | 2,479,004          |
| Interest Received   |       | 177,825            | 171,882            |
| Profit on sale of assets  |       | -                  | 3,209              |
| Other   | 13    | 151,754            | 135,039            |
| <b>Total Operating Revenue</b>                                    |       | <u>2,994,386</u>   | <u>5,272,409</u>   |
| <b>Operating Expenses</b>   |       |                    |                    |
| Wages & Salaries  |       | 233,196            | 194,955            |
| Superannuation  |       | 26,695             | 24,005             |
| <b>AINSE Awards</b>   |       |                    |                    |
| Students  | 9     | 324,487            | 462,229            |
| Research Fellowship   | 9     | 360,441            | -                  |
| Research Awards   | 9     | 1,387,034          | 1,757,163          |
| Conference Subsidies  |       | 185,887            | 110,987            |
| External Grants   | 11    | -                  | 3,368,252          |
| Other Expenses  | 12    | 236,707            | 347,141            |
| <b>Total Operating Expenses</b>                                   |       | <u>2,754,447</u>   | <u>6,264,732</u>   |
| <b>Surplus/(Deficit) for the year</b>                             |       | 239,939            | (992,323)          |
| Accumulated funds brought forward                                 |       | (1,225,255)        | (33,932)           |
| <b>Accumulated Surplus (Deficit)</b>                              |       | <u>(985,316)</u>   | <u>(1,026,255)</u> |
| <b>Add (Less): transfer to Reserves</b>                           |       |                    |                    |
| Grants Reserve  | 14    | (495,681)          | (199,000)          |
| <b>Accumulated results of operations at end of financial year</b> |       | <u>(1,480,997)</u> | <u>(1,225,255)</u> |

The accompanying notes form an integral part of these accounts.

# Statement of Cash Flows

as at 31 December 2007

|  | Notes | 31-Dec-07<br>\$    | 31-Dec-06<br>\$    |
|--|-------|--------------------|--------------------|
|  |       | Inflows/(Outflows) | Inflows/(Outflows) |
| <b>CASH FLOWS PROVIDED BY (USED IN) OPERATING ACTIVITIES</b> |       |                    |                    |
| Receipts from members  |       | 2,798,516          | 1,506,503          |
| Receipts from grants   |       | -                  | 1,465,251          |
| Interest received  |       | 177,034            | 184,702            |
|  |       | <u>2,975,550</u>   | <u>3,156,456</u>   |
| Grant expenditures   |       | (2,257,849)        | (5,698,631)        |
| Payments to suppliers and employees                          |       | (701,443)          | (298,454)          |
|  |       | <u>(2,959,292)</u> | <u>(5,997,085)</u> |
| Net cash flows provided by (used in) operating activities    | 16    | <u>16,258</u>      | <u>(2,840,629)</u> |
| <b>CASH FLOWS PROVIDED BY (USED IN) INVESTING ACTIVITIES</b> |       |                    |                    |
| Proceeds from sale of property, plant and equipment          |       | -                  | 2,982,797          |
| Purchase of property, plant and equipment                    |       | -                  | (28,910)           |
| Net cash flows provided by (used in) investing activities    |       | <u>-</u>           | <u>2,953,887</u>   |
| Net increase (decrease) in cash held                         |       | 16,258             | 113,258            |
| Cash at beginning of reporting period                        |       | 2,487,439          | 2,374,181          |
| Cash at end of reporting period                              | 2/4   | <u>2,503,697</u>   | <u>2,487,439</u>   |

# Statement of Changes in Equity

as at 31 December 2007

|  | Retained Earnings  | Long Term Projects | Awards Reserve   | Total            |
|--|--------------------|--------------------|------------------|------------------|
|  | \$                 | \$                 | \$               | \$               |
| Balance at 1 January 2006              | (33,932)           | 500,000            | 2,366,000        | 2,832,068        |
| Profit attributable to entity          | (992,323)          | -                  | -                | (992,323)        |
| Transfers to and from reserves         |                    |                    |                  |                  |
| Awards Reserve                         | (199,000)          | -                  | 199,000          | -                |
| Balance at 31 December 2006            | <u>(1,225,255)</u> | <u>500,000</u>     | <u>2,565,000</u> | <u>1,839,745</u> |
| Profit / (Loss) attributable to entity | 239,939            | -                  | -                | 239,939          |
| Transfers to and from reserves         | -                  | -                  | -                | -                |
| Awards Reserve                         | (495,681)          | -                  | 495,681          | -                |
| Balance at 31 December 2007            | <u>(1,480,997)</u> | <u>500,000</u>     | <u>3,060,681</u> | <u>2,079,684</u> |

The accompanying notes form an integral part of these accounts.

# Notes to the Financial Statements for the Year Ended 31 December 2007

at 31 December 2007

The financial report is a general purpose financial report that has been prepared in accordance with Accounting Standards, Australian Accounting Interpretations, other authoritative pronouncements of the Australian Accounting Standards Board and the *Associations Incorporation Act 1984 (NSW)*.

The financial report covers the economic entity of The Australian Institute of Nuclear Science and Engineering ("The Institute") as an individual entity. The Institute is an association incorporated in New South Wales under the *Associations Incorporation Act 1984 (NSW)*.

The Institute complies with all Australian equivalents to International Financial Reporting Standards (IFRS) in their entirety.

The following is a summary of the material accounting policies adopted in the preparation of the financial report. The accounting policies have been consistently applied, unless otherwise stated.

## Basis of Preparation

### *Reporting Basis and Conventions*

The financial report has been prepared on an accruals basis and is based on historical costs modified by the revaluation of selected non-current assets, and financial assets and financial liabilities for which the fair value basis of accounting has been applied.

## 1. STATEMENT OF SIGNIFICANT ACCOUNTING POLICIES

### Accounting Policies

#### a) Income Tax

The Institute is exempt from income tax.

#### b) Property, Plant and Equipment

Each class of property, plant and equipment is carried at cost or fair value, less where applicable, any accumulated depreciation and impairment losses.

### *Plant and Equipment*

Plant and equipment are measured on the cost basis less depreciation and impairment losses.

The cost of fixed assets constructed within the economic entity includes the cost of materials, direct labour, borrowing costs and appropriate proportion of fixed and variable overheads.

Subsequent costs are included in the asset's carrying amount or recognised as a separate asset, as appropriate, only when it is probable that future economic benefits associated with the item will flow to the group and the cost of the item can be measured reliably. All other repairs and maintenance are charged to the income statement during the financial period in which they are incurred.

### *Depreciation*

The depreciable amount of all fixed assets excluding plant and equipment currently under construction, is depreciation on a straight line basis over their useful lives to The Institute commencing from the time the asset is held ready for use. The depreciation rates used for each class of depreciable assets are:

| Class of Fixed Asset | Depreciation Rate |
|----------------------|-------------------|
| Plant and Equipment  | 15 - 35%          |

The asset's residual values and useful lives are reviewed, and adjusted if appropriate, at each balance sheet date.

Gains and losses on disposals are determined by comparing proceeds with the carrying amount. These gains or losses are included in the income statement.

#### c) Financial Instruments

### *Recognition*

Financial instruments are initially measured at cost on trade date, which includes transaction costs, when the related contractual or obligations exist. Subsequent to initial recognition these instruments are measured as set out below.

### *Financial assets at fair value through profit and loss*

A financial asset is classified in this category if acquired principally for the purpose of selling in the short term or if so designated by

management and within the requirements of AASB 139: Recognition and Measurement of Financial Instruments. Realised and unrealised gains and losses arising from changes in the fair value of these assets are included in the income statement in the period in which they arise.

#### *Fair Value*

Fair value is determined based on current bid prices for all quoted investments. Valuation techniques are applied to determine the fair value for all unlisted securities, including recent arm's length transactions, reference to similar instruments and option pricing models.

#### *Impairment of Assets*

At each reporting date, the Institute assesses whether there is objective evidence that a financial instrument has been impaired.

#### **d) Impairment of Assets**

At each reporting date, the Institute reviews the carrying values of its tangible and intangible assets to determine whether there is any indication that those assets have been impaired. If such an indication exists, the recoverable amount of the asset, being the higher of the asset's fair value less costs to sell and value in use, is compared to the asset's carrying value. Any excess of the asset's carrying value over its recoverable amount is expensed to the income statement.

Impairment testing is performed annually for goodwill and intangible assets with indefinite lives.

Where it is not possible to estimate the recoverable amount of an individual asset, the Institute estimates the recoverable amount of the cash-generating unit to which the asset belongs.

#### **e) Employee Benefits**

Provision is made for the Institute's liability for employee benefits arising from services rendered by employees to balance date. Employee benefits that are expected to be settled within one year have been measured at the amounts expected to be paid when the liability is settled, plus related on-costs. Employee benefits payable later than one year have been measured at the present value of the estimated future cash outflows to be made for those benefits.

#### **f) Provisions**

Provisions are recognised when the Institute has a legal or constructive obligation, as a result of past events, for which it is probable that an outflow of economic benefits will result and that outflow can be reliably measured.

#### **g) Cash and Cash Equivalents**

Cash and cash equivalents include cash on hand, deposits held at call with banks, other short-term highly liquid investments with original maturities of three months or less, and bank overdrafts. Bank overdrafts are shown within short-term borrowings in current liabilities on the balance sheet.

#### **h) Revenue**

Revenue from the rendering of a service is recognised upon the delivery of the service to the customers.

Interest revenue is recognised on a proportional basis taking into account the interest rates applicable to the financial assets.

All revenue is stated net of the amount of Goods and Services Tax.

#### **i) Goods and Services Tax (GST)**

Revenues, expenses and assets are recognised net of the amount of GST, except where the amount of GST incurred is not recoverable from the Australian Taxation Office. In these circumstances, the GST is recognised as part of the cost of acquisition of the asset or as part of an item of expense. Receivables and payables in the balance sheet are shown inclusive of GST.

Cash flows are presented in the cash flow statement on a gross basis, except for the GST component of investing and financing activities, which are disclosed as operating cash flows.

#### **j) Comparative Figures**

When required by Accounting Standards, comparative figures have been adjusted to conform to changes in presentation for the current financial year.



# Notes to the Financial Statements

as at 31 December 2007

|                                       | 31-Dec-07                    | 31-Dec-06             |               |
|---------------------------------------|------------------------------|-----------------------|---------------|
|                                       | \$                           | \$                    |               |
| <b>2. CASH</b>                        |                              |                       |               |
| Operating Account                     | 101,445                      | 57,242                |               |
| Petty Cash                            | 500                          | 500                   |               |
|                                       | <u>101,945</u>               | <u>57,742</u>         |               |
| <b>3. TRADE AND OTHER RECEIVABLES</b> |                              |                       |               |
| Current                               |                              |                       |               |
| Trade Debtors                         | 26,184                       | 6,802                 |               |
| Other Receivables                     | 99,343                       | 100,680               |               |
|                                       | <u>125,527</u>               | <u>107,482</u>        |               |
| <b>4. INVESTMENTS</b>                 |                              |                       |               |
| Cash Deposit Account                  | 2,401,752                    | 2,429,697             |               |
|                                       | <u>2,401,752</u>             | <u>2,429,697</u>      |               |
| <b>5. OTHER CURRENT ASSETS</b>        |                              |                       |               |
| Current                               |                              |                       |               |
| Interest Accrued                      | 14,402                       | 13,611                |               |
|                                       | <u>14,402</u>                | <u>13,611</u>         |               |
| <b>6. PLANT AND EQUIPMENT</b>         |                              |                       |               |
| Plant & Equipment                     |                              |                       |               |
| At Cost                               | 75,081                       | 75,081                |               |
| Accumulated Depreciation              | (75,081)                     | (72,256)              |               |
| Total Plant and Equipment             | <u>-</u>                     | <u>2,825</u>          |               |
| Motor Vehicle                         |                              |                       |               |
| At Cost                               | 28,910                       | 28,910                |               |
| Accumulated Depreciation              | (11,243)                     | (1,606)               |               |
| Total Motor Vehicle                   | <u>17,667</u>                | <u>27,304</u>         |               |
| <b>Movements in Carrying Amounts</b>  |                              |                       |               |
|                                       | <b>Plant &amp; Equipment</b> | <b>Motor Vehicles</b> | <b>Total</b>  |
| Balance at Beginning of Year          | 2,825                        | 27,304                | 30,129        |
| Depreciation Expense                  | (2,825)                      | (9,637)               | (12,462)      |
| Carrying Amount at End of Year        | <u>-</u>                     | <u>17,667</u>         | <u>17,667</u> |

# Notes to the Financial Statements

as at 31 December 2007

|   | Notes | 31-Dec-07<br>\$  | 31-Dec-06<br>\$  |
|---|-------|------------------|------------------|
| <b>7. TRADE AND OTHER PAYABLES</b>            |       |                  |                  |
| Unsecured Liabilities                         |       |                  |                  |
| Trade Payables                                |       | 35,112           | 722              |
| Sundry Payables and Accrued Expenses          |       | 454,590          | 726,851          |
| John Ferris Memorial Fund                     |       | 5,362            | -                |
| Short-Term Employee Benefits                  | 8     | <u>60,344</u>    | <u>52,164</u>    |
|   |       | <u>555,408</u>   | <u>779,737</u>   |
| <b>8. PROVISION FOR EMPLOYEE ENTITLEMENTS</b> |       |                  |                  |
| Long-Term Employee Benefits                   |       | <u>26,201</u>    | <u>19,179</u>    |
|   |       | 26,201           | 19,179           |
| <b>9. AINSE AWARDS</b>                        |       |                  |                  |
| AINSE AWARDS - Post Graduate Awards           |       |                  |                  |
| Lucas Heights Costs                           |       | 99,181           | 164,338          |
| University Travel and Equipment               |       | 22,629           | 24,590           |
| Stipends                                      |       | <u>184,014</u>   | <u>231,815</u>   |
|   |       | <u>305,824</u>   | <u>420,743</u>   |
| AINSE AWARDS - AINSE Winter School            |       | <u>18,663</u>    | <u>15,619</u>    |
|   |       | 18,663           | 15,619           |
| AINSE AWARDS - Research Fellowships           |       | <u>360,441</u>   | <u>25,867</u>    |
|   |       | <u>360,441</u>   | <u>25,867</u>    |
| AINSE AWARDS - Awards                         |       |                  |                  |
| Lucas Heights Costs                           |       | 1,307,619        | 1,643,426        |
| Minor Equipment and Materials                 |       | 1,700            | 7,155            |
| Travel and Accommodation                      |       | 77,684           | 103,326          |
| Other Costs                                   |       | 31               | 3,256            |
|   |       | <u>1,387,034</u> | <u>1,757,163</u> |
| <b>10. SEGMENT REPORTING</b>                  |       |                  |                  |

The Institute operates in the research sector providing funds for research to members within Australia and New Zealand.

# Notes to the Financial Statements

as at 31 December 2007

|  | 31-Dec-07 | 31-Dec-06        |
|--|-----------|------------------|
|  | \$        | \$               |
| <b>11. EXTERNAL GRANTS</b>                                     |           |                  |
| <b>ARC ISIS Grant</b>  |           |                  |
| Grant Revenue  | -         | 240,000          |
| Member Contributions   | -         | 151,250          |
|  | <u>-</u>  | <u>391,250</u>   |
| Grant Expenditure  |           |                  |
| External Payments  | -         | 400,000          |
| Total Expenditure  | -         | 400,000          |
|  | <u>-</u>  | <u>400,000</u>   |
| <b>ARC STAR Accelerator Grant</b>                              |           |                  |
| Operating Revenue  |           |                  |
| Grant Revenue  | -         | 1,013,754        |
| Member Contributions   | -         | 1,073,000        |
|  | <u>-</u>  | <u>2,086,754</u> |
| Operating Expenses   |           |                  |
| STAR Accelerator   | -         | 2,968,252        |
|  | <u>-</u>  | <u>2,968,252</u> |
| Operating Deficit relating to STAR Accelerator                 | -         | (881,498)        |
|  | <u>-</u>  | <u>(881,498)</u> |
| <b>Reconciliation</b>  |           |                  |
| Total External Grants Revenue                                  | -         | 2,479,004        |
| less transferred to Grants Received In Advance (Balance Sheet) | -         | -                |
|  | <u>-</u>  | <u>-</u>         |
| External Grant Revenue (Income & Expenditure Statement)        | -         | 2,479,004        |
|  | <u>-</u>  | <u>2,479,004</u> |
| <b>Represented by:</b>   |           |                  |
| Total Grant Expenditure (Income & Expenditure Statement)       | -         | 3,368,252        |
| Amount to be met by AINSE                                      | -         | (889,248)        |
|  | <u>-</u>  | <u>(889,248)</u> |
| External Grants Expenditure                                    | -         | 2,479,004        |
|  | <u>-</u>  | <u>2,479,004</u> |

# Notes to the Financial Statements

| as at 31 December 2007            | 31-Dec-07          | 31-Dec-06          |
|-----------------------------------|--------------------|--------------------|
|                                   | \$                 | \$                 |
| <b>12. OTHER EXPENDITURE</b>      |                    |                    |
| Conference Management             | 67,909             | 106,368            |
| Publications and Promotions       | 10,383             | 53,966             |
| Meetings and Committees           | 81,702             | 105,536            |
| AINSE Secretariat                 |                    |                    |
| Audit Fees                        | 7,590              | 10,610             |
| Bank Charges                      | 2,071              | 1,751              |
| Depreciation                      | 12,462             | 14,046             |
| Advertising and Printing          | -                  | 150                |
| Office Supplies                   | 1,161              | 1,256              |
| Postage and Telephone             | 2,197              | 1,816              |
| Insurance                         | 8,082              | 11,149             |
| Entertaining                      | 47                 | 515                |
| Books and Software                | -                  | 734                |
| Office Equipment and Repairs      | 4,532              | 2,993              |
| Administration and Staff Training | 904                | 1,061              |
| Travel and Accommodation          | 15,315             | 15,590             |
| Vehicle Expenses                  | 9,555              | 12,685             |
| Publications and Promotions       | -                  | 1,579              |
| Staff Recruitment                 | 8,864              | -                  |
| FBT Expense & Payments            | 2,567              | 3,640              |
| Miscellaneous                     | 1,366              | 1,696              |
| Total AINSE Secretariat           | <u>76,713</u>      | <u>81,271</u>      |
| <br>Total Other Expenditure       | <br><u>236,707</u> | <br><u>347,141</u> |
| <b>13. OTHER INCOME</b>           |                    |                    |
| Sponsorships:                     |                    |                    |
| ITER Workshop                     | -                  | 60,580             |
| ICNS                              | 81,389             | 20,000             |
| Conference Registrations          | 65,115             | 50,069             |
| Other                             | 5,250              | 4,390              |
|                                   | <u>151,754</u>     | <u>135,039</u>     |
| <b>14. MOVEMENT IN RESERVES</b>   |                    |                    |
| Awards Reserve                    |                    |                    |
| Opening Balance at 1 January      | 2,565,000          | 2,366,000          |
| Transfer from Accumulated Funds   | 495,681            | 199,000            |
| Balance as at 31 December         | <u>3,060,681</u>   | <u>2,565,000</u>   |
| Long Term Projects Reserve        |                    |                    |
| Opening Balance at 1 January      | 500,000            | 500,000            |
| Transfer from Accumulated Funds   | -                  | -                  |
| Balance as at 31 December         | <u>500,000</u>     | <u>500,000</u>     |

The Long Term Projects Reserve has been established to ensure that a reasonable proportion of Institute surplus of each year is preserved for investment in new research infrastructure if need be.

# Notes to the Financial Statements

as at 31 December 2007

|  | 31-Dec-07        | 31-Dec-06          |
|--|------------------|--------------------|
|  | \$               | \$                 |
| <b>15. AUDITORS REMUNERATION</b>   |                  |                    |
| Remuneration of the auditor of the entity for:   |                  |                    |
| Auditing or reviewing the financial report   | 7,590            | 7,350              |
| Acquittal of Grants  | -                | 450                |
| Other Services   | -                | 2,810              |
|  | <u>7,590</u>     | <u>10,610</u>      |
| <b>16. RECONCILIATION OF OPERATING RESULT WITH CASH FLOWS FROM ORDINARY ACTIVITIES</b> |                  |                    |
| Profit from Ordinary Activities  | 239,939          | (992,323)          |
| Changes in Assets & Liabilities  |                  |                    |
| (Increase)/Decrease in Trade Debtors   | (18,045)         | (31,087)           |
| Increase/(Decrease) Trade Payables   | (224,329)        | 251,487            |
| (Increase)/Decrease Accrued Interest   | (791)            | 12,820             |
| Increase/(Decrease) Employee Entitlements  | 7,022            | 2,114              |
| Increase/(Decrease) Other Current Liabilities  | -                | (1,080,724)        |
| Increase/(Decrease) Grants Received in Advance   | -                | (1,013,753)        |
|  | <u>(236,143)</u> | <u>(1,859,143)</u> |
| Non-Cash Items   |                  |                    |
| Depreciation   | 12,462           | 14,046             |
| Gain on sale of asset  | -                | (3,209)            |
|  | <u>12,462</u>    | <u>10,837</u>      |
| Net cash provided by (used in) operating activities                                    | <u>16,258</u>    | <u>(2,840,629)</u> |

## 17. FINANCIAL INSTRUMENTS

### Financial Risk Management

The Institute's financial instruments consist mainly of deposits with banks, local money market instruments, short-term investments and accounts receivable & payable.

The main purpose of non-derivative financial instruments is to raise finance for the Institute's operations.

The Institute does not have any derivative instruments at 31 December 2007.

Financial Instruments are held under normal commercial policies, terms and conditions regularly adopted by businesses in Australia.

The main risks the Institute is exposed to through its financial instruments are liquidity risk, credit risk and interest rate risk.

#### a) Liquidity Risk

The Institute manages liquidity risk by monitoring forecast cash flows and ensuring that adequate utilised borrowing facilities are maintained.

#### b) Credit risk

The maximum exposure to credit risk, excluding the value of any collateral or other security at balance date to recognised financial assets is the carrying amount, net of any provisions for impairment of those assets, as disclosed in the balance sheet and notes to the financial statements.

The Institute does not have any material credit risk exposure to any single receivable or group of receivables under financial instruments entered into by the economic entity.

#### c) Interest Rate Risk

The Institute's exposure to interest rate risk, which is the risk that a financial instrument's value will fluctuate as a result of changes in market

interest rates and the effective weighted average interest rates on those financial assets and financial liabilities, is as follows:

## Notes to the Financial Statements

### 17. FINANCIAL INSTRUMENTS (cont'd)

|                           | Weighted Average Effective Interest Rate |        | Floating Interest Rate |           | Within 1 year |         | Fixed Interest Rate Maturing 1 to 5 years |         | Non-interest bearing |         | Total     |           |
|---------------------------|--|--------|------------------------|-----------|---------------|---------|---|---------|----------------------|---------|-----------|-----------|
|                           | 2007 %                                   | 2006 % | 2007 \$                | 2006 \$   | 2007 \$       | 2006 \$ | 2007 \$                                   | 2006 \$ | 2007 \$              | 2006 \$ | 2007 \$   | 2006 \$   |
| Financial Assets          |  |        |                        |           |               |         |   |         |                      |         |           |           |
| Cash and cash equivalents | 6.01%                                    | 5.25%  | 2,503,197              | 2,486,939 | -             | -       | -   | -       | 500                  | 500     | 2,503,697 | 2,487,439 |
| Receivables               | -  | -      | -                      | -         | -             | -       | -   | -       | 125,527              | 107,482 | 125,527   | 107,482   |
| Total Financial Assets    |  |        | 2,503,197              | 2,486,939 | -             | -       | -   | -       | 126,027              | 107,982 | 2,629,224 | 2,594,921 |

### Net Fair Values

The net fair value of financial assets and liabilities approximates their carrying value because of their short term to maturity. No financial assets and financial liabilities are readily traded on organised markets in standardised form. Financial assets where the carrying amount exceeds net fair values have not been written down as the Institute intends to hold the assets to maturity.

The aggregate net fair values and carrying amounts of financial assets and financial liabilities are disclosed in the Statement of Financial Position and in the Notes to the Financial Statements.

Aggregate net fair values and carrying amounts of financial assets and financial liabilities at balance date:

|                          | 2007               |                   | 2006               |                   |
|--------------------------|--------------------|-------------------|--------------------|-------------------|
|                          | Carrying amount \$ | Net Fair Value \$ | Carrying amount \$ | Net Fair Value \$ |
| Financial assets         |                    |                   |                    |                   |
| Cash                     | 2,503,697          | 2,503,697         | 2,487,439          | 2,487,439         |
| Receivables              | 125,527            | 125,527           | 107,482            | 107,482           |
| Investments              | -                  | -                 | -                  | -                 |
|                          | <u>2,629,224</u>   | <u>2,629,224</u>  | <u>2,594,921</u>   | <u>2,594,921</u>  |
| Financial liabilities    |                    |                   |                    |                   |
| Trade and other payables | 555,408            | 555,408           | 779,737            | 779,737           |
|                          | <u>555,408</u>     | <u>555,408</u>    | <u>779,737</u>     | <u>779,737</u>    |

Fair values are materially in line with carrying values.

# Notes to the Financial Statements

as at 31 December 2007

|  |        | 31-Dec-07<br>\$  | 31-Dec-06<br>\$  |
|--|--------|------------------|------------------|
| <b>18. COMMITMENTS</b>   |        |                  |                  |
| ISIS   |        | -                | 7,750            |
| Awards, Fellowships and Studentships Awarded in 2007 for payment in 2008 | Note A | <u>3,060,680</u> | <u>2,565,000</u> |
|  |        | <u>3,060,680</u> | <u>2,572,750</u> |

## Note A

Invoices for membership fees are raised in January and payment is subsequently received over the first three quarters. Accordingly, funds received from membership fees in 2007 are used for grants and studentships during 2008. AINSE commits \$500,000 pa to studentships.

## 19. ASSOCIATION DETAILS

The principal place of business of the Institute is:

Australian Institute of Nuclear Science and Engineering Inc  
New Illawarra Road,  
Lucas Heights, NSW, AUSTRALIA

## 20. KEY MANAGEMENT PERSONNEL COMPENSATION

|                    | Short-term Benefit<br>\$ | Post Employment Benefit<br>\$ | Total<br>\$    |
|--------------------|--------------------------|-------------------------------|----------------|
| 2007               |                          |                               |                |
| Total compensation | <u>116,004</u>           | <u>5,216</u>                  | <u>121,220</u> |
| 2006               |                          |                               |                |
| Total compensation | <u>101,903</u>           | <u>5,876</u>                  | <u>107,779</u> |

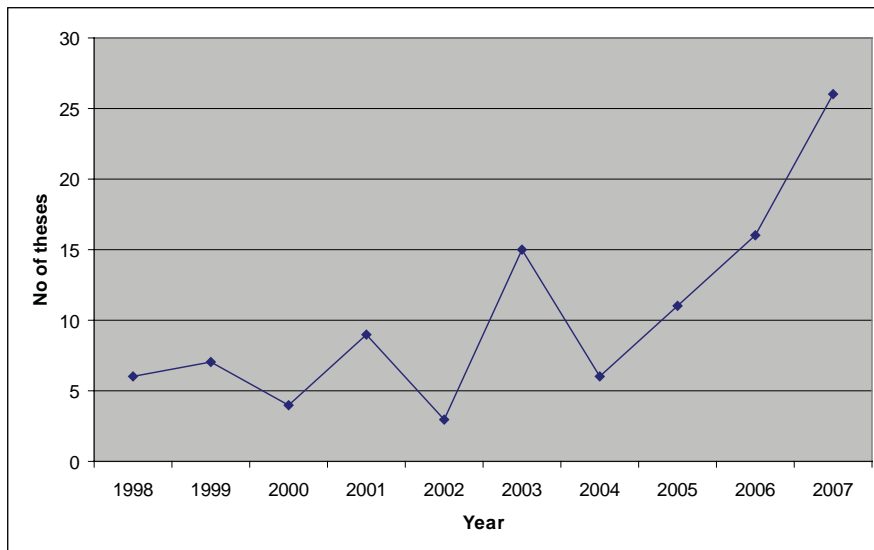
# AINSE Postgraduate Research Awards

To be nominated for one of these awards, an applicant must hold an Australian Postgraduate Award (APA) or equivalent scholarship.

In addition to providing a student with a supplement for up to three years, the Award gives access to ANSTO's world-class facilities and expertise. A stipend of \$7,500 pa and \$5,500 pa are provided towards the costs involved in using facilities at Lucas Heights, and an allowance for travel and accommodation costs is also awarded to enable students to work at Lucas Heights.

Eleven new AINSE postgraduate research projects were supported by a Post-Graduate Research Award in 2007 bringing the total of current scholars to 55. Through its Post-Graduate Research Award scheme, AINSE has now helped train 232 students in aspects of nuclear science and associated techniques of analysis. Many more students have been assisted with their research by gaining access to Lucas Heights facilities through AINSE Awards made to their supervisors. The Council believes that one of the most valuable roles fulfilled by AINSE is the provision of these AINSE Post-Graduate Research Awards.

During the year 26 theses were received from scholars who had completed their studies and another 8 had submitted their theses and were awaiting results at 31 December. During the year 2 scholars discontinued their studies.



Graph showing the number of PGRA scholars completing each year for the last decade.

On the following pages scholars marked with an asterix\* are continuing without stipend.



## Postgraduate scholars, and their projects, who were supported during 2006

*Procedures for radiologically contaminated biological evidence: a counter terrorism initiative*  
Serena Abbondante Forensic Analysis, University of Canberra. Commenced 01/07/05

*Corals as biomonitors of Darwin Harbour health*  
Yasmin Antwertinger Science and Primary Industries, Charles Darwin University. Commenced 01/07/03

*Selenium assimilation and distribution in marine organisms*  
Clare Atkinson GeoQuest Research group, University of Wollongong. Commenced 01/07/06

*A fine-resolution reconstruction of climatic fluctuations over the last 2000 years in south-eastern Australia*  
\*Cameron Barr Geography & Environmental Studies, University of Adelaide. Commenced 01/07/04

*Reaction mechanisms of lithium-based hydrogen storage materials*  
Edmund Burt Nanoscale Science and Technology Centre, Griffith University. Commenced 1/7/07

*Modification of coal microstructure upon uptake of carbon dioxide in geological-storage-like conditions*  
Tara Busbridge Nanoscale Science and Technology Centre, Griffith University. Commenced 1/7/07

*High temperature fatigue behaviour and life prediction of advanced engineering materials*  
Mark Callaghan Chemistry Materials and Forensic Science, University of Technology Sydney. Commenced 01/07/04

*Measurement of nanomagnetic and nanostructural properties of ferrofluids by small angle neutron and x-ray scattering*  
Matthew Carroll Physics, The University of Western Australia. Commenced 01/07/06

*Controlling precipitation processes in the production of value-added zirconia*  
Geoffrey Carter Applied Physics, Curtin University of Technology. Commenced 01/07/06

*Plasma surface modification of polymers for biomedical applications*  
\*Chanokporn Chaiwong Applied and Plasma Physics, The University of Sydney. Commenced 01/07/04

*Calixarenes as potential ionophores for ion-selective electrodes*  
\*Ryan Chester Applied Chemistry, Curtin University of Technology. Commenced 01/07/04

*Electrochemically "switchable" silicon based organic surfaces: dynamic substrates to study the adhesion of mammalian cells*  
Simone Ciampi School of Chemistry, University of New South Wales. Commenced 1/7/07

*Structure and properties of porous discrete supramolecular materials*  
Martin Duriska Chemistry, Monash University. Commenced 1/7/07

*Radiocarbon dating of rice husk temper from Angkorean brick temples*  
Damian Evans Archaeology, University of Sydney. Commenced 01/07/05

*Gold processing using thiosulfate lixiviants*  
Adam Fischmann Chemistry, Monash University. Commenced 01/07/03

*Historical ecology and the record of human impact in the Galapagos Islands*  
Iona Flett Archaeology and Natural History, Australian National University. Commenced 01/07/03

*Development of a composite conjugated polymer/dye sensitiser/carbon nanotube blend organic solar cell*  
Roland Goh Mechanical, Manufacturing and Medical Engineering, Queensland University of Technology. Commenced 01/07/04

*Reversible addition-fragmentation chain-transfer (RAFT) polymerization using  $\gamma$ -radiation initiation of high-conversion glassy polymers and novel polymeric materials*  
Geoffrey Hall Chemical Engineering and Industrial Chemistry, The University of New South Wales. Commenced 01/07/04

*Groundwater resources and salinity associated with granite hills in the Upper Wimmera Basin, western Victoria*  
Sarah Hagerty, Environmental Science, La Trobe University. Commenced 1/7/07

*Macromolecular orientation induced by injection molding processes*  
John Healy Physics and Materials Engineering, Monash University. Commenced 01/07/03

*Development of radiolabelled peripheral benzodiazepine receptor ligands for imaging and therapy of tumours and neurodegeneration*  
Taryn Homes Chemistry, University of Wollongong. Commenced 01/07/04

*Investigation of the structural basis for regulation of the phosphorelay governing sporulation in *Bacillus subtilis**  
David Jacques Molecular and Microbial Biosciences, The University of Sydney. Commenced 1/7/07

*Effect of sugars on bilayer to non-bilayer phase transitions in biological membranes during dehydration*  
Ben Kent Applied Physics, RMIT University. Commenced 01/07/06

*X-ray and neutron scattering of multiferroic materials*  
Shane Lawrence Applied Physics, Curtin University of Technology. Commenced 1/7/07

*Use of cosmogenic nuclides to constrain the glacial history of the Lambert-Amery Basin, East Antarctica*  
Katherine Lilly Research School of Earth Science, Australian National University. Commenced 01/07/04

*Diamond-like carbon coating for biomedical applications*  
Wen Jie Ma Centre for Advanced Materials Technology, The University of Sydney. Commenced 01/07/06

*A palaeoecological reconstruction of the lower Snowy River, East Gippsland: environmental response to climate change, land use and river regulation*  
\*Angus MacGregor Geographical & Environmental Studies, University of Adelaide. Commenced 01/07/03

*Analysing small-angle scattering data using the correlation function*  
Clinton Maitland Applied Physics, Curtin University of Technology. Commenced 01/07/04

*Small-angle scattering analysis of structural rearrangements of Parkinson's disease-associated protein kinases*  
Ryan Mills Biochemistry and Molecular Biology, The University of Melbourne. Commenced 01/07/06

*New proxies for the climate debate: AMS dates and stable carbon isotopes of peat deposits from NE Queensland*  
\*Joanne Muller Earth Sciences, James Cook University. Commenced 01/07/03

*Tailored nanoparticles for nanotoxicological studies*  
Anthony Musumeci Australian Institute of Bioengineering & Nanotechnology, The University of Queensland. Commenced 1/7/07

*Benthic diatoms as biological indicators of acid mine drainage in tropical areas of the Northern Territory*  
\*Louise Mutton Geographical & Environmental Studies, University of Adelaide. Commenced 01/07/04

*Scales of variability: El Niño, human impact and Greater Flamingo populations in internationally significant Galapagos wetlands*  
Ashley Natt Geographical and Environmental Studies, University of Adelaide. Commenced 01/07/06

*Structure-property relationships in thermoset nanocomposites*  
Betime Nuhiji Engineering and Technology, Deakin University. Commenced 01/07/06

*Mathematical modelling of drying of colloidal nanoparticle sols*  
Glen Oberman Mathematical Sciences, Queensland University of Technology. Commenced 01/07/04

*Evaluating residual stress measurements using neutron diffraction for welds in steel structures and pressure vessels and relating this to the design and fitness-for-purpose assessments*  
Anna Paradowska Mechanical Engineering, Monash University. Commenced 01/07/04

*Impact of climate change on late Holocene penguin populations of the Vestfold Hills, Antarctica, using high resolution lake sediment cores*  
\*Rachael Parkinson Institute of Antarctic & Southern Ocean Studies, University of Tasmania. Commenced 01/07/04

*A nanostructural investigation of hydrogen storage in aluminium*  
Mark Paskevicius Applied Physics, Curtin University of Technology. Commenced 01/07/06

*Residual stress measurement in highly constrained welds*  
Susan Pearce Mechanical Engineering, University of Adelaide. Commenced 01/07/04

*<sup>10</sup>Be in Antarctic ice cores: quantifying climate effects for improved reconstructions of solar activity*  
Joel Pedro IASOS, University of Tasmania. Commenced 1/7/07

*Protein behaviour at interfaces*  
Adam Perriman Chemistry, Australian National University. Commenced 01/07/03

*Tracing the origin of salinity and quantifying its future changes in the eastern Hopkins Catchment, western Victoria*  
Mattias Raiber Environmental Sciences, La Trobe University. Commenced 01/07/05

*The reconstruction of an ~850 proxy rainfall record from a Christmas Island (Indian Ocean) stalagmite*  
Dale Redwood Geology, The University of Newcastle. Commenced 1/7/07

*Immobilising sol gel technology for biomineralisation and biocatalysis*  
\*Lisa Rodgers Biotechnology & Biomolecular Sciences, The University of New South Wales. Commenced 01/07/02

*Nanoscale multilayer materials*

**Luke Ryves** Applied and Plasma Physics, University of Sydney. Commenced 01/07/05

*Structural studies of ionic conductive defect perovskites*

**Paul Saines** Chemistry University of Sydney Commenced 01/07/05

*Effects of urban eutrophication in southeast Australian coastal lagoon ecosystems: three case studies*

**Krystyna Saunders** Institute of Antarctic & Southern Ocean Studies, University of Tasmania. Commenced 01/07/04

*Geometrically frustrated magnetism in bismuth platinum-group oxides*

**Neeraj Sharma** Chemistry, The University of Sydney. Commenced 01/07/06

*Processing of TiO<sub>2</sub> based semiconducting ceramics*

**\*Leigh Sheppard** Materials Science & Engineering, The University of New South Wales. Commenced 01/07/03

*Hydrogen adsorption in intercalated graphite: comparison between experiment and simulation*

**Drew Sheppard** Applied Physics, Curtin University of Technology. Commenced 01/07/03

*Characterisation of arsenic doped mercury cadmium telluride grown by molecular beam epitaxy for infrared detector applications*

**Gordon Tsen** Electrical, Electronic & Computer Engineering, University of Western Australia. Commenced 01/07/05

*Structural characterization of bismuth oxide-based, highly conductive solid electrolytes*

**Nathan Webster** Chemistry, The University of Western Australia. 01/07/06

*Microdosimetry and nanodosimetry in proton therapy*

**Andrew Wroe** Engineering Physics, University of Wollongong. Commenced 01/07/04

*Disposal of unfolded proteins by members of the LDL receptor superfamily*

**Amy Wyatt** Biological Sciences, University of Wollongong. Commenced 01/07/05

*Silicon microdosimetry for measuring the radiobiological effectiveness of a radiation field*

**Amy Ziebell** Centre for Medical Radiation Physics, University of Wollongong. Commenced 1/7/07

# Summary of AINSE Awards

The primary purpose of AINSE Awards is to facilitate access by university researchers and research students to the nuclear science and technology facilities at Lucas Heights and other AINSE supported facilities, including travel and accommodation during periods of attachment. These awards are principally in the form of "credits" against which payments are made by AINSE on behalf of the award holder on receipt of appropriate invoices. In this manner, some allowance can be made for the uncertainties associated with research and enables AINSE to achieve the high degree of flexibility and control needed to ensure the allocation of time on the facilities is fully utilised. AINSE Awards very often provide the valuable initial support which leads to additional external funding, estimated to have been worth several million dollars to member organisations.

The disciplines involved during 2007 included the following disciplines

physics applied, electronic materials, mathematical, nuclear and high energy, plasma

chemistry applied, biochemistry, chemical technology, polymer science

engineering chemical, electrical, mechanical, microelectronics

biology biological science, biomaterials, biomedical science and engineering, biophysics, genetics

environmental & earth sciences environmental biology, environmental geology, geochemistry, geography, coastal management, marine science

medicine medical and health physics, nuclear, positron emission tomography

plus Aboriginal and Torres Strait Studies, Antarctic and Southern Ocean studies, anthropology, applied geology, archaeology, botany, cultural studies, earth sciences, geology, geophysics, geomorphology, materials science and engineering, microscopy and microanalysis, natural history, resource science and management, safety science, zoology.

Awards for 2007 are shown on the following pages in order of university, department and surname to highlight the diversity of institutions and disciplines within which projects occur. This includes arrangements for general research students' access to Lucas Heights facilities but does not include access arrangements for AINSE postgraduate scholars, see pages 24-27. Awards marked with an asterisk (\*) have industry linkages. The total amount of the awards for each university is also shown. Nearly all of these projects involved close cooperation between university people and ANSTO staff and required substantial use of the reactor, accelerators and other facilities at the Lucas Heights Research Establishment.

For information on particular facilities utilised, see progress reports are published on our home page, <http://www.ainse.edu.au>

During 2007 155 projects were awarded. They had a total value of \$1,644,639 involving thirty-three of the thirty-nine university members. The table on the following page shows the distribution of awards by university and by specialist areas.

### Specialist Areas

| UNI   | A  | B  | E  | M  | N  | Total |
|-------|----|----|----|----|----|-------|
| ADE   | 2  |    | 3  |    |    | 5     |
| AKL   | 1  |    | 1  |    | 1  | 3     |
| ANU   | 8  |    | 3  |    |    | 11    |
| CAN   | 1  |    |    | 1  |    | 2     |
| CBR   | 1  |    | 1  |    |    | 2     |
| CUR   |    |    |    | 2  | 2  | 4     |
| DEA   |    |    | 1  |    |    | 1     |
| ECU   |    |    |    | 1  |    | 1     |
| FLI   |    | 3  |    | 4  |    | 7     |
| GRI   |    |    |    | 1  |    | 1     |
| IGN   |    |    |    | 1  |    | 1     |
| JAM   | 1  |    | 1  |    | 1  | 3     |
| LAT   | 3  |    | 2  |    |    | 5     |
| MAC   | 1  |    | 1  | 1  |    | 3     |
| MEL   | 2  | 2  | 2  | 4  | 3  | 13    |
| MON   | 1  |    | 1  | 2  | 2  | 6     |
| MUR   |    |    |    | 2  |    | 2     |
| NCT   |    |    | 1  | 2  |    | 3     |
| NSW   | 3  |    | 2  | 5  | 2  | 12    |
| OTA   | 2  |    |    |    |    | 2     |
| QLD   | 4  | 2  | 1  | 1  |    | 8     |
| QUT   |    |    | 1  | 2  |    | 3     |
| RMI   |    | 1  |    | 6  |    | 7     |
| SCU   |    |    | 5  | 1  |    | 6     |
| SYD   | 4  | 2  | 2  | 4  | 2  | 14    |
| TAS   | 3  |    | 4  |    |    | 7     |
| UNE   | 2  |    |    |    |    | 2     |
| USA   |    |    |    |    | 1  | 1     |
| USQ   | 1  |    | 1  |    |    | 2     |
| UTS   |    |    | 2  | 1  | 1  | 4     |
| UWA   |    |    | 1  | 2  |    | 3     |
| WOL   |    | 3  | 5  | 2  | 1  | 11    |
| Total | 40 | 13 | 41 | 45 | 16 | 155   |

### Legend

|   |  |
|---|--|
| A | Archaeology and Geosciences            |
| B | Biomedical Science and Biotechnology   |
| E | Environmental Science                  |
| M | Materials - Properties and Engineering |
| N | Materials – Structures and Dynamics    |

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## University of Adelaide

### Geography and Environmental Studies

|         |   |          |
|---------|---|----------|
| 07/056P | Dr Peter Gell<br>Environmental change in the coastal wetlands near Adelaide, South Australia, as inferred via diatom analysis of mangrove sediments | \$16,606 |
| 07/049  | Dr Jennie Fluin<br>Analysis of biological fossils in Lake Alexandrina to assess changes in water quality and flow regimes                           | \$12,976 |
| 07/048  | Dr Jennie Fluin<br>Reconstruction of floodplain palaeoenvironments by analysing carbon and nitrogen in sediments                                    | \$4,552  |

### Humanities & Social Sciences

|        |   |          |
|--------|---|----------|
| 07/160 | Professor Martin Williams<br>Depositional chronology of late Pleistocene valley-fills in the Flinders Ranges of South Australia | \$13,274 |
|--------|---|----------|

### Sciences

|        |  |         |
|--------|--|---------|
| 07/124 | Professor John Prescott<br>Low level uranium, thorium and trace element determinations for luminescence dating | \$4,340 |
|--------|--|---------|

|                              |  |          |
|------------------------------|--|----------|
| University of Adelaide Total |  | \$51,748 |
|------------------------------|--|----------|

## The University of Auckland

### Arts

|        |  |         |
|--------|--|---------|
| 07/001 | Dr Melinda Allen<br>Developing a radiocarbon chronology for the northern Marquesas Islands, East Polynesia, Phase II | \$4,866 |
|--------|--|---------|

### Chemistry

|        |  |          |
|--------|--|----------|
| 07/073 | A/Professor Hicham Idriss<br>Study of hydrogen production catalysts from bio-ethanol | \$13,922 |
|--------|--|----------|

### Geology

|        |   |          |
|--------|---|----------|
| 07/130 | Dr Phil Shane<br>Resolving the timing of tephra addition to Auckland maar craters | \$21,718 |
|--------|---|----------|

|                              |  |          |
|------------------------------|--|----------|
| University of Auckland Total |  | \$40,506 |
|------------------------------|--|----------|

## Australian National University

### Archaeology and Anthropology

|        |  |         |
|--------|--|---------|
| 07/008 | Dr Peter Bellwood<br>AMS C14 dating of a 2000 year old jade workshop in the northern Philippines | \$4,866 |
|--------|--|---------|

### Earth & Marine Sciences

|        |  |          |
|--------|--|----------|
| 07/117 | Dr Bradley Opdyke<br>Carbon-14 dating to improve the resolution of Paleocyanography in the Timor Sea | \$10,520 |
|--------|--|----------|

|        |   |          |
|--------|---|----------|
| 07/036 | Dr Patrick De Deckker<br>The dating of deep-sea core tops from the Indian Ocean | \$13,480 |
|--------|---|----------|

|   |   |                 |
|---|---|-----------------|
| 07/037  | Dr Patrick De Deckker<br>Holocene dating of Blue Lake, Mt Gambier, South Australia  | \$4,866         |
| 07/044  | Professor David Ellis<br>A Pb- and Sr- isotopic study of anthropogenic pollutants in NSW estuarine systems  | \$5,410         |
| <b>Research School of Earth Sciences</b>              |   |                 |
| 07/042  | Dr Jim Dunlap<br>Calibration of OPAL for use in <sup>40</sup> Ar/ <sup>39</sup> Ar age determination, and application to K-rich minerals for geological studies | \$19,915        |
| <b>Research School of Pacific and Asian Studies</b>   |   |                 |
| 07/007  | Dr Stuart Bedford<br>The obsidian sources and distribution systems emanating from Gaua and Vanua Lava in the Banks Islands of Vanuatu                           | \$7,200         |
| 07/064  | Dr Simon Haberle<br>Holocene interaction between fire and monsoon in Northern Australia   | \$8,594         |
| 07/063  | Dr Simon Haberle<br><sup>13</sup> C and <sup>15</sup> N stable isotope analysis of two tropical sediment records covering the last 20ka                         | \$1,225         |
| 07/138  | Dr Janelle Stevenson<br>Early human occupation and landscape change in Island Southeast Asia: new research at Ille Cave, Palawan, the Philippines               | \$4,718         |
| <b>The Fenner School of Environment &amp; Society</b> |   |                 |
| 07/062  | Dr Richard Greene<br>Chemistry and origins of salts in aeolian transported dust across Australia  | \$12,850        |
| <b>Australian National University Total</b>           |   | <b>\$93,644</b> |

## University of Canterbury

### Chemistry

|        |   |         |
|--------|---|---------|
| 07/127 | A/Professor Greg Russell<br>Cyclodextrins: probing an important new frontier in emulsion polymerization | \$6,070 |
|--------|---|---------|

### Gateway Antarctica

|        |  |          |
|--------|--|----------|
| 07/140 | Professor Bryan Storey<br>Dynamics and change of the Darwin-Hatherton glacial system | \$12,648 |
|--------|--|----------|

|                                       |  |                 |
|---------------------------------------|--|-----------------|
| <b>University of Canterbury Total</b> |  | <b>\$18,718</b> |
|---------------------------------------|--|-----------------|

## University of Canberra

### Environmental Chemistry

|        |  |         |
|--------|--|---------|
| 07/100 | Professor Bill Maher<br>Establishing food webs in two coastal seagrass ecosystems using carbon, nitrogen and sulfur isotopes | \$3,500 |
|--------|--|---------|

### Resource, Environmental and Heritage Sciences

|        |  |         |
|--------|--|---------|
| 07/047 | Dr Nancy FitzSimmons<br>A comparative study of food web dynamics in freshwater rivers of the Kimberley using stable isotopes | \$2,625 |
|--------|--|---------|

|                                     |  |                |
|-------------------------------------|--|----------------|
| <b>University of Canberra Total</b> |  | <b>\$6,125</b> |
|-------------------------------------|--|----------------|

## Curtin University of Technology

### Applied Chemistry

|         |  |          |
|---------|--|----------|
| 07/038P | Professor Roland De Marco<br>A SIMS study of the role of water uptake in novel all-solid-state polymeric ion sensors       | \$14,850 |
| 07/173  | Professor Roland De Marco<br>Ion selective atomic force microscopy: a powerful new imaging technique for materials science | \$7,055  |

### Applied Physics

|                         |   |          |
|-------------------------|---|----------|
| 07/179                  | A/Professor Craig Buckley<br>Nanostructure and texture in Acacia tension wood               | \$2,220  |
| 07/096P                 | A/Professor It-Meng Low<br>Novel synthesis and properties of ternary carbide and composites | \$4,983  |
| Curtin University Total |   | \$29,108 |

## Deakin University

### Ecology and Environment Science

|                         |   |         |
|-------------------------|---|---------|
| 07/155                  | Dr Mark Warne<br>Environmental history of the Moyne River Estuary, Port Fairy, western Victoria | \$5,640 |
| Deakin University Total |   | \$5,640 |

## Edith Cowan University

### Natural Science

|                              |   |          |
|------------------------------|---|----------|
| 07/152                       | Dr Magdalena Wajrak<br>Investigation of conditioning methods on the gold electrode surface employed in electroanalyses of arsenic | \$13,625 |
| Edith Cowan University Total |   | \$13,625 |

## Flinders University

### Chemistry, Physics and Earth Sciences

|         |  |          |
|---------|--|----------|
| 07/095  | Dr Dusan Losic<br>Bio-inspired engineering of nanoporous membranes for molecular separation                                    | \$13,740 |
| 07/090  | Dr Mahaveer Kurkuri<br>Investigation of novel polymer coatings on silicon and glass substrates for cell-based assays           | \$9,226  |
| 07/020  | Dr Martin Johnston<br>Investigating next generation <sup>64</sup> Cu Positron Emission Tomography (PET) imaging agents         | \$41,980 |
| 07/126P | Dr Jamie Quinton<br>Hydrogen content determination of RF-plasma modified carbon surfaces for nanotechnological sensors         | \$34,840 |
| 07/131  | Dr Joseph Shapter<br>Membrane interactions with drugs and proteins   | \$2,840  |
| 07/151P | Dr Nicholas Voelcker<br>Surface analysis of a patterned platform for the advanced spatial and temporal control of biomolecules | \$7,268  |

### Flinders Medical Centre

|                           |  |           |
|---------------------------|--|-----------|
| 07/144                    | Dr Pamela Sykes<br>The measurement of genetic damage (DNA inversions) in response to radiation | \$41,380  |
| Flinders University Total |  | \$151,274 |



## Griffith University

### Engineering

|                           |   |         |
|---------------------------|---|---------|
| 07/065                    | Dr Jisheng Han<br>SIMS analysis on Interface between epitaxy SiC layer and Si | \$7,160 |
| Griffith University Total |   | \$7,160 |

## GNS Science

|                   |  |          |
|-------------------|--|----------|
| 07/084            | Dr John Kennedy<br>Cross section transmission electron microscopy studies of ion beam sputtered ZnO thin films | \$10,471 |
| GNS Science Total |  | \$10,471 |

## James Cook University

### Earth and Environmental Sciences

|        |  |         |
|--------|--|---------|
| 07/161 | Dr Raphael Wust<br>Determining the age of multiple paleosoil horizons in fluvial overbank deposits near Townsville, Queensland | \$6,700 |
|--------|--|---------|

### Mathematical and Physical Sciences

|        |   |          |
|--------|---|----------|
| 07/158 | A/Professor Ian Whittingham<br>Investigations of bio-inorganic interfaces | \$10,530 |
|--------|---|----------|

### TESAG

|        |   |         |
|--------|---|---------|
| 07/098 | Dr Jon Luly<br>Reconstructing centennial scale monsoonal activity from the tree rings of the rare desert tree <i>Acacia peuce</i> | \$4,866 |
|--------|---|---------|

|                             |  |          |
|-----------------------------|--|----------|
| James Cook University Total |  | \$22,096 |
|-----------------------------|--|----------|

## La Trobe University

### Archaeology

|        |  |         |
|--------|--|---------|
| 07/034 | Dr Richard Cosgrove<br>Antiquity of toxic plant use in the wet tropics of far north Queensland | \$4,866 |
|--------|--|---------|

|        |   |         |
|--------|---|---------|
| 07/050 | Dr David Frankel<br>The chronology of Chalcolithic Cyprus | \$9,732 |
|--------|---|---------|

|        |  |          |
|--------|--|----------|
| 07/120 | Dr Christina Pavlides<br>At the crossroads: 6500 years of obsidian consumption on the Lamogai Plateau, West New Britain, PNG | \$13,070 |
|--------|--|----------|

### Botany

|        |  |         |
|--------|--|---------|
| 07/113 | Dr John Morgan<br>A lead looking glass into the past: changes in peat soils since European use of the Alps | \$7,200 |
|--------|--|---------|

### Environmental Management and Ecology

|        |   |         |
|--------|---|---------|
| 07/052 | Mr Martin Fussell<br>Groundwater and surface water interaction in the Murrumbidgee Valley | \$3,318 |
|--------|---|---------|

|                           |  |          |
|---------------------------|--|----------|
| La Trobe University Total |  | \$38,186 |
|---------------------------|--|----------|

## Macquarie University

### Ancient History

|         |   |         |
|---------|---|---------|
| 07/136P | Dr Karin Sowada<br>Will the real mummy please step forward: dating ancient Egyptian human remains in museum collections | \$6,488 |
|---------|---|---------|

### CISAB

|        |  |         |
|--------|--|---------|
| 07/146 | Dr Phillip Taylor<br>Improved protocols for irradiation of Queensland fruit flies (Q-flies) used in the Sterile Insect Technique (SIT) | \$7,320 |
|--------|--|---------|

### Electronics

|         |   |         |
|---------|---|---------|
| 07/149P | Associate Professor Graham Town<br>Fabrication of thin films of polymer nanocomposite materials | \$7,182 |
|---------|---|---------|

|                            |  |          |
|----------------------------|--|----------|
| Macquarie University Total |  | \$20,990 |
|----------------------------|--|----------|

## The University of Melbourne

### Anthropology, Geography & Environmental Studies

|        |  |          |
|--------|--|----------|
| 07/148 | Dr Ian Thomas<br>A regional analysis of Holocene vegetation and climate history from the giant sand islands of South East Queensland | \$13,084 |
|--------|--|----------|

### Botany

|        |   |          |
|--------|---|----------|
| 07/004 | Professor Alan Baker<br>Use of PIXE for spatial distribution and localisation of copper in Cu-indicating plants <i>Haumaniastrum robertii</i> and <i>Elsholtzia splendens</i> | \$16,790 |
|--------|---|----------|

### Chemical and Biomolecular Engineering

|         |   |         |
|---------|---|---------|
| 07/125P | Dr John Provis<br>Effect of immobilised species on geopolymer reactions and structure | \$9,800 |
|---------|---|---------|

### Chemistry

|         |  |         |
|---------|--|---------|
| 07/025P | Dr Rachel Caruso<br>Organic functionalised hierarchical metal oxide materials for radionuclide sequestration | \$7,898 |
|---------|--|---------|

|        |  |          |
|--------|--|----------|
| 07/026 | Dr Rachel Caruso<br>The incorporation of gold nanoparticles in porous titanium dioxide materials for photocatalytic applications | \$16,546 |
|--------|--|----------|

|        |  |          |
|--------|--|----------|
| 07/027 | Dr Rachel Caruso<br>Mesoporous electrode materials for high powered energy storage devices | \$13,418 |
|--------|--|----------|

|        |   |         |
|--------|---|---------|
| 07/031 | Dr Dehong Chen<br>Metal doped titanium dioxide materials for dye-sensitized solar cell applications | \$7,123 |
|--------|---|---------|

|        |  |          |
|--------|--|----------|
| 07/164 | Dr Meifang Zhou<br>Evolution of TiO <sub>2</sub> mesoporous structures in highly concentrated surfactant systems | \$11,690 |
|--------|--|----------|

### Earth Sciences

|        |   |          |
|--------|---|----------|
| 07/059 | Professor Andrew Gleadow<br>The application of fission track analysis to fundamental problems in the Earth Sciences | \$10,600 |
|--------|---|----------|

|         |  |          |
|---------|--|----------|
| 07/089P | Dr Barry Kohn<br>Atomic force microscopy nanoscale study of implanted heavy ions as a proxy for spontaneous <sup>238</sup> U fission fragments | \$10,780 |
|---------|--|----------|

### Genetics

|        |   |          |
|--------|---|----------|
| 07/024 | Professor James Camakaris<br>Application of copper-64 to studies on Alzheimer's disease and characterisation of novel genes and proteins involved in copper homeostasis | \$14,000 |
|--------|---|----------|

## Mechanical and Manufacturing Engineering

|        |  |          |
|--------|--|----------|
| 07/168 | Dr Daniel Riley<br>Novel synthesis of nanolaminate materials using integrating compounds | \$12,802 |
|--------|--|----------|

## Peter Macallum Cancer Research Centre

|        |   |          |
|--------|---|----------|
| 07/106 | A/Professor Roger Martin<br>Pulse radiolysis studies with DNA-binding radioprotectors | \$11,725 |
|--------|---|----------|

The University of Melbourne Total \$156,256

## Monash University

### Geography and Environmental Science

|        |  |         |
|--------|--|---------|
| 07/085 | Professor Peter Kershaw<br>The value of plant macrofossils for environmental reconstruction and conservation in western Victoria | \$4,718 |
|--------|--|---------|

### Engineering

|        |  |         |
|--------|--|---------|
| 07/133 | Dr Raman Singh<br>Characterization of thin surface films developed on engineering alloys exposed to corrosive environments | \$6,940 |
|--------|--|---------|

### Science

|        |   |          |
|--------|---|----------|
| 07/016 | Dr Ben Boyd<br>Using phase transitions to trigger drug release from nanostructured liquid crystalline drug delivery systems | \$13,870 |
|--------|---|----------|

|        |  |         |
|--------|--|---------|
| 07/018 | Dr Ben Boyd<br>The use of PALS and 2DDoppler for the characterization of thin films of nanostructured self-assembling amphiphile systems | \$5,010 |
|--------|--|---------|

|        |  |          |
|--------|--|----------|
| 07/174 | Dr Ian Cartwright<br>Sustainability of groundwater in freshwater lenses, River Murray, Australia | \$15,002 |
|--------|--|----------|

|        |  |         |
|--------|--|---------|
| 07/028 | A/Professor John Cashion<br>Preparation, properties and potential uses of ferromagnetic gold nanoparticles | \$6,000 |
|--------|--|---------|

Monash University Total \$51,540

## Murdoch University

### Chemistry

|         |  |         |
|---------|--|---------|
| 07/134P | Dr Pritam Singh<br>Investigating the electrochemical behaviour of lithium manganese phosphate ( $\text{LiMnPO}_4$ ) as a cathode material in aqueous solutions | \$8,430 |
|---------|--|---------|

### Extractive Metallurgy

|        |   |         |
|--------|---|---------|
| 07/111 | Dr Manickam Minakshi<br>Investigation of manganese dioxide cathode in the presence of $\text{TiS}_2$ as additive in an aqueous lithium secondary cell | \$7,501 |
|--------|---|---------|

Murdoch University Total \$33,970

## University of Newcastle

### Environmental and Life Sciences

|         |   |         |
|---------|---|---------|
| 07/099P | Dr Geoff MacFarlane<br>Distribution of metals in the hair of a native insectivore; <i>Antechinus stuartii</i> (Marsupialia, Dasyuridae) | \$6,698 |
|---------|---|---------|

### Mathematical & Physical Sciences

|        |  |         |
|--------|--|---------|
| 07/087 | A/Professor Bruce King<br>Capillary effects in friction between alumina, titania and zirconia layers formed by atomic layer deposition | \$4,282 |
|--------|--|---------|

### Mechanical Engineering

|        |  |         |
|--------|--|---------|
| 07/170 | Professor Erich Kisi<br>Grazing incidence x-ray diffraction study of the Pt-Al <sub>2</sub> O <sub>3</sub> interface | \$3,700 |
|--------|--|---------|

|                               |  |          |
|-------------------------------|--|----------|
| University of Newcastle Total |  | \$14,680 |
|-------------------------------|--|----------|

## The University of New England

### Human and Environment Studies

|        |  |         |
|--------|--|---------|
| 07/067 | Dr Robert Haworth<br>Determination of sedimentation rates in the upper Namoi River floodplains (Liverpool Plains) from AMS dating of alluvial overburden | \$4,866 |
|--------|--|---------|

|        |  |          |
|--------|--|----------|
| 07/178 | Dr Robert Haworth<br>Fixed biological indicators and Holocene sea level change at Cape Edgecumbe, North Queensland | \$11,132 |
|--------|--|----------|

|                                     |  |          |
|-------------------------------------|--|----------|
| The University of New England Total |  | \$15,998 |
|-------------------------------------|--|----------|

## The University of New South Wales

### Anatomy

|        |  |          |
|--------|--|----------|
| 07/068 | Dr Andrew Herries<br>Dating of tufa formation, climatic pulsing and human occupation near Ulco, Ghaap Escarpment, South Africa | \$15,086 |
|--------|--|----------|

### Biological Earth & Environmental Sciences

|        |   |       |
|--------|---|-------|
| 07/171 | Dr Brenton Ladd<br>Towards a physical description of habitat: on the relationship between functional traits and the abiotic environment in Eucalyptus | \$840 |
|--------|---|-------|

|        |  |         |
|--------|--|---------|
| 07/061 | Dr Ian Graham<br>PIXE trace element analysis of corundums and zircons from different geological settings: a key to understanding their genesis | \$9,600 |
|--------|--|---------|

|        |  |         |
|--------|--|---------|
| 07/060 | Dr Ian Graham<br>Geochemical characterisation of selected sites from the Riversleigh World Heritage Area as indicators of palaeoenvironmental formation conditions | \$8,240 |
|--------|--|---------|

### Centre for Water and Waste Technology

|        |  |         |
|--------|--|---------|
| 07/032 | Dr Richard Collins<br>Measurement of isotopically exchangeable Al in acid sulfate soils using <sup>26</sup> Al and AMS | \$2,211 |
|--------|--|---------|

## Chemical Sciences and Engineering

|         |   |          |
|---------|---|----------|
| 07/006P | Dr Leonie Barner<br>Radiolabelling of functional polymeric microspheres | \$13,000 |
|---------|---|----------|

## Materials Science & Engineering

|        |  |          |
|--------|--|----------|
| 07/069 | A/Professor Mark Hoffman<br>Effect of the hydrogen annealing on the elemental distribution in lead zirconate titanate (PZT) ceramic investigated by analytical TEM | \$7,491  |
| 07/029 | Dr Sammy Chan<br>Manufacturing of titanium matrix composites with nanometric reinforcements using hot isostatic press  | \$7,475  |
| 07/046 | A/Professor Michael Ferry<br>Thermomechanical behaviour of multi-functional titanium alloys  | \$4,575  |
| 07/092 | Dr Sean Li<br>Investigation of atomic disorder effects on photonic properties of ZnO   | \$12,400 |

## Physical, Environmental and Mathematical Sciences ADFA

|        |   |         |
|--------|---|---------|
| 07/139 | Dr Glen Stewart<br>The crystal field at the rare earth site in thulium manganese silicide | \$2,578 |
|--------|---|---------|

## Aerospace Civil and Mechanical Engineering ADFA

|        |  |          |
|--------|--|----------|
| 07/167 | Dr Krishnakumar Shankar<br>Production of nanometric reinforced aluminium matrix composites by powder metallurgy (P/M) using hot isostatic press(HIP) | \$11,700 |
|--------|--|----------|

|                                     |  |          |
|-------------------------------------|--|----------|
| University of New South Wales Total |  | \$95,196 |
|-------------------------------------|--|----------|

## Otago University

### Anthropology

|        |   |         |
|--------|---|---------|
| 07/153 | A/Professor Richard Walter<br>Evolution of the rural based Maori cultural landscape in the far north of New Zealand in the late prehistoric and early proto-historic period | \$5,772 |
| 07/143 | Professor Glenn Summerhayes<br>Identifying prehistoric trade and exchange between New Guinea and Manus: the sourcing of obsidian from the Schouten Islands, East Sepik, PNG | \$5,745 |

|                           |  |          |
|---------------------------|--|----------|
| University of Otago Total |  | \$11,517 |
|---------------------------|--|----------|

## University of Queensland

### Aboriginal and Torres Strait Islander Studies

|        |  |         |
|--------|--|---------|
| 07/150 | Dr Sean Ulm<br>Marine carbon reservoir variability along the NSW Coast | \$8,950 |
|--------|--|---------|

### Australian Institute for Bioengineering and Nanotechnology

|        |  |          |
|--------|--|----------|
| 07/104 | Dr Darren Martin<br>Radiolabelling of industrially-relevant nanoparticles for use in nanotoxicology investigations | \$22,290 |
|--------|--|----------|

### Centre for Marine Studies

|        |   |          |
|--------|---|----------|
| 07/175 | Dr Catherine Lovelock<br>Understanding mangrove colonisation of recent marine sediments | \$16,695 |
|--------|---|----------|

## Geography, Planning & Architecture

|        |  |         |
|--------|--|---------|
| 07/115 | Dr Patrick Moss<br>Late Quaternary environments of North Stradbroke Island, Southeast Queensland | \$9,070 |
|--------|--|---------|

## Physics

|         |  |         |
|---------|--|---------|
| 07/181P | Dr Ujjual Divakar<br>Metal mixing by ion implantation for soft devices | \$8,154 |
|---------|--|---------|

## Psychiatry

|        |  |          |
|--------|--|----------|
| 07/108 | Professor John McGrath<br>Is adult neurogenesis in schizophrenia altered? A pilot study using <sup>14</sup> C dating of post-mortem neuronal DNA | \$30,025 |
|--------|--|----------|

## Social Sciences

|        |   |         |
|--------|---|---------|
| 07/079 | Dr Jennifer Kahn<br><sup>14</sup> C dating of monumental public architecture (Marae) in the Society Islands, French Polynesia | \$5,826 |
|--------|---|---------|

|        |  |         |
|--------|--|---------|
| 07/156 | Dr Marshall Weisler<br>Calibration of the late Holocene C-14 marine reservoir ages in Hawaii using U-series dated corals | \$7,299 |
|--------|--|---------|

|                                |  |           |
|--------------------------------|--|-----------|
| University of Queensland Total |  | \$108,309 |
|--------------------------------|--|-----------|

## Queensland University of Technology

### Mechanical Engineering

|        |   |          |
|--------|---|----------|
| 07/147 | Dr Tuquabo Tesfamichael<br>Characterization of ion implanted femtosecond diamond-like carbon films (fs-DLC) | \$12,921 |
|--------|---|----------|

### Physical and Chemical Sciences

|        |   |          |
|--------|---|----------|
| 07/003 | Dr Godwin Ayoko<br>Chemical composition and source identification of fine aerosols in South East Queensland | \$14,860 |
|--------|---|----------|

|         |  |          |
|---------|--|----------|
| 07/051P | Professor Ray Frost<br>Synthesis and characterisation of titania nanotubes | \$17,939 |
|---------|--|----------|

|   |  |          |
|---|--|----------|
| Queensland University of Technology Total |  | \$45,720 |
|---|--|----------|

## RMIT University

### Applied Chemistry

|         |   |          |
|---------|---|----------|
| 07/101P | Professor David Mainwaring<br>Irradiation induced electrical conductivity in polymeric thin films | \$14,100 |
|---------|---|----------|

### Applied Physics

|        |   |         |
|--------|---|---------|
| 07/021 | Dr Gary Bryant<br>Characterization of different conformational forms of malarial antigen MSP2 | \$5,950 |
|--------|---|---------|

|        |  |          |
|--------|--|----------|
| 07/074 | Professor Peter Johnston<br>Heavy ion beam nanolithography | \$17,415 |
|--------|--|----------|

|         |   |         |
|---------|---|---------|
| 07/107P | A/Professor Dougal McCulloch<br>Design and synthesis of advanced broadband optical coatings using atomic layer deposition | \$4,180 |
|---------|---|---------|

### Civil and Chemical Engineering

|         |  |          |
|---------|--|----------|
| 07/154P | Dr Liam Ward<br>Ion implantation of austenitic, ferritic and martensitic stainless steels for improved corrosion and wear resistance | \$20,098 |
|---------|--|----------|

## Electrical & Computer Engineering

|                       |   |          |
|-----------------------|---|----------|
| 07/070P               | Dr Anthony Holland<br>Deposition and characterisation of piezoelectric thin films                         | \$13,544 |
| 07/071P               | Dr Anthony Holland<br>Composition analysis and electrical properties of silicide-semiconductor interfaces | \$12,932 |
| RMIT University Total |   | \$88,219 |

## Southern Cross University

### Environmental Science and Management

|                                 |  |          |
|---------------------------------|--|----------|
| 07/022                          | Dr Edward Burton<br>Transmission electron microscopic examination of sedimentary iron-monosulfide mineralogy and nano-structure in acidified estuarine waterways | \$6,581  |
| 07/023                          | Dr Richard Bush<br>Delta <sup>34</sup> S enrichment of authigenic sulfides: unravelling this geochemical anomaly of coastal lowland acid sulfate soils           | \$24,800 |
| 07/045                          | Associate Professor Brad Eyre<br>Sources of organic matter that fuel fisheries production in NSW estuaries   | \$3,600  |
| 07/119                          | Dr Jeffrey Parr<br>Characterisation of zeolites  | \$4,300  |
| 07/141                          | A/Professor Leigh Sullivan<br>Reverting acid sulfate soils to more natural wetting and drying cycles: biogeochemical processes and environmental benefits        | \$10,895 |
| 07/145                          | Dr Kathryn Taffs<br>An investigation into the history of eutrophication in Eastern Australian estuaries  | \$11,230 |
| Southern Cross University Total |  | \$61,406 |

## University of South Australia

### Ian Wark Research Institute

|                                     |   |          |
|-------------------------------------|---|----------|
| 07/102                              | Professor Peter Majewski<br>Synthesis of mesoporous functionalized zirconium titanate for actinide removal from water | \$13,667 |
| University of South Australia Total |   | \$13,667 |

## The University of Sydney

### Archaeology

|        |   |          |
|--------|---|----------|
| 07/157 | Dr Peter White<br>Pleistocene and Holocene use and exchange of obsidian artefacts in West New Britain, Papua New Guinea | \$16,800 |
| 07/002 | Dr Mark Allon<br>The dating of an ancient birch bark Buddhist scroll recently acquired by the Library of Congress       | \$811    |

### Chemical Engineering

|         |  |          |
|---------|--|----------|
| 07/066P | Dr Andrew Harris<br>The development of microporous silicon carbide for high temperature applications | \$17,032 |
|---------|--|----------|

## EPR Group

|        |   |         |
|--------|---|---------|
| 07/035 | Professor Michael Davies<br>Do superoxide radicals act synergistically with hypochlorite and hypobromite to induce biological damage? | \$5,705 |
|--------|---|---------|

## Geosciences

|         |  |          |
|---------|--|----------|
| 07/013  | Professor Gavin Birch<br>Construct a chronologic contaminant framework for central NSW estuaries using dated sediment cores and contaminant analyses                   | \$11,073 |
| 07/055  | Dr Stephen Gale<br>European impact on the natural environment of Kangaroo Island   | \$4,800  |
| 07/053  | Dr Stephen Gale<br>European impact on vegetation in arid Australia   | \$8,904  |
| 07/121P | Dr Dan Penny<br>Dating the foundation myth of Angkor: a <sup>14</sup> C chronology for settlement and earliest urbanism at the World Heritage site of Angkor, Cambodia | \$6,488  |

## Key Centre for Polymer Colloids

|         |  |       |
|---------|--|-------|
| 07/058P | Dr Brian Hawke<br>Polymerisation of polymer colloids | \$900 |
|---------|--|-------|

## Medical Radiation Sciences

|        |   |          |
|--------|---|----------|
| 07/083 | Mr Peter Kench<br>Assessing millimetric signal variations within small organs through the use of SPECT multi-pinhole technology | \$44,815 |
|--------|---|----------|

## Molecular and Microbial Biosciences

|        |   |          |
|--------|---|----------|
| 07/180 | Professor Philip Kuchel<br>The structural determination of <i>Staphylococcus aureus</i> alpha haemolysin heptamer in a model membrane | \$11,100 |
|--------|---|----------|

## Physics

|         |  |          |
|---------|--|----------|
| 07/012P | Professor Marcela Bilek<br>Composition of ternary alloys: TCO and MAX phase thin films                 | \$12,396 |
| 07/011  | Professor Marcela Bilek<br>Structural characterisation of ternary alloys: TCO and MAX phase thin films | \$16,317 |
| 07/094  | Dr Sunnie Lim<br>Consolidation of elementally specific deposition cathodes for TCO applications        | \$6,300  |

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|--------------------------------|--|-----------|
| The University of Sydney Total |  | \$163,441 |
|--------------------------------|--|-----------|

## University of Southern Queensland

### Biological and Physical Sciences

|         |   |         |
|---------|---|---------|
| 07/103P | Dr Martine Maron<br>A high-resolution chronology of rainfall in the upper Murray-Darling River system | \$9,624 |
|---------|---|---------|

### Humanities and Social Sciences

|        |   |         |
|--------|---|---------|
| 07/005 | Dr Bryce Barker<br>Post 600BP on the central Queensland coast and dynamic cultural transformations in northern coastal Australia, Torres Strait and Melanesia | \$7,299 |
|--------|---|---------|

|   |  |          |
|---|--|----------|
| The University of Southern Queensland Total |  | \$16,923 |
|---|--|----------|



## University of Tasmania

### Antarctic, Climate and Ecosystems CRC

|         |  |         |
|---------|--|---------|
| 07/072P | Dr William Howard<br>Holocene chronology for calibration of South Tasman Rise palaeoceanographic proxies | \$9,708 |
|---------|--|---------|

### Centre of Excellence in Ore Deposits

|        |  |         |
|--------|--|---------|
| 07/162 | Dr Khin Zaw<br>PIXE/PIGE analysis of trace element composition in hydrothermal magnetite: implications for ore formation | \$7,778 |
|--------|--|---------|

### Geography & Environmental Studies

|        |  |          |
|--------|--|----------|
| 07/086 | Dr Kevin Kiernan<br>Dating deglaciation and karst evolution in southeastern Alaska | \$11,870 |
|--------|--|----------|

### Institute of Antarctic & Southern Ocean Studies

|        |  |         |
|--------|--|---------|
| 07/109 | Professor Andrew McMinn<br>Impact of climate change on late Holocene penguin populations of the Vestfold Hills, East Antarctica, using high resolution lake sediment cores | \$8,213 |
|--------|--|---------|

### Marine Research Laboratories

|        |   |         |
|--------|---|---------|
| 07/166 | Dr John Gibson<br>Effects of pre and post settlement on the health and stability of Little Swanport Estuary | \$5,000 |
|--------|---|---------|

|        |   |         |
|--------|---|---------|
| 07/057 | Dr John Gibson<br>Determination of a temporal framework for mid-late Holocene tephra deposition in the Antarctic Peninsula region | \$8,110 |
|--------|---|---------|

### Plant Science

|        |  |          |
|--------|--|----------|
| 07/014 | Professor David Bowman<br>Using radiocarbon bomb pulse to perfect the dating tree rings in <i>Callitris</i> in outback Australia | \$17,282 |
|--------|--|----------|

|                              |  |          |
|------------------------------|--|----------|
| University of Tasmania Total |  | \$67,961 |
|------------------------------|--|----------|

## University of Technology Sydney

### Chemistry, Materials and Forensic Science

|         |   |          |
|---------|---|----------|
| 07/009P | Dr Besim Ben-Nissan<br>Characterisation and analysis of sol-gel derived hydroxyapatite and zirconia nano-coating interfaces with anodised titanium substrates | \$10,924 |
|---------|---|----------|

### Environmental Sciences

|         |  |         |
|---------|--|---------|
| 07/043P | Professor Derek Eamus<br>Relationships amongst water-use efficiency (carbon isotope discrimination) climate and hydraulic architecture of Australian trees | \$3,500 |
|---------|--|---------|

|        |  |          |
|--------|--|----------|
| 07/135 | Professor Greg Skilbeck<br>Compositional variation of organic detritus in Botany Bay during the Holocene | \$11,610 |
|--------|--|----------|

### Physics and Advanced Materials

|        |  |         |
|--------|--|---------|
| 07/041 | Dr Annette Dowd<br>Microstructural study of VO <sub>2</sub> phase transition | \$9,730 |
|--------|--|---------|

|                                       |  |          |
|---------------------------------------|--|----------|
| University of Technology Sydney Total |  | \$35,764 |
|---------------------------------------|--|----------|

## The University of Western Australia

### Electrical and Electronic Engineering

|         |  |          |
|---------|--|----------|
| 07/129P | Dr Richard Sewell<br>SIMS analysis of dopant incorporation and transient effects during MBE growth of HgCdTe | \$7,205  |
| 07/088P | Dr Martin Kocan<br>Ion implantation of epitaxial GaN material  | \$12,476 |

### Zoology

|        |   |         |
|--------|---|---------|
| 07/019 | Professor Don Bradshaw<br>Measurement of protein turnover in free-ranging honey possums | \$1,705 |
|--------|---|---------|

The University of Western Australia Total \$21,386

## University of Wollongong

### Chemistry

|        |   |          |
|--------|---|----------|
| 07/039 | Dr Carolyn Dillon<br>The role of S-containing arsenic complexes in arsenic-mediated anti-cancer action                          | \$33,879 |
| 07/169 | Dr Paul Keller<br>The testing of CRH antagonists as potential new therapeutics for the prevention of premature birth            | \$14,700 |
| 07/081 | Dr Paul Keller<br>The development of sigma-1 and sigma-2 receptor ligands as diagnostic probes for cancer and neurodegeneration | \$32,300 |

### Earth and Environmental Sciences

|         |   |         |
|---------|---|---------|
| 07/076  | A/Professor Brian Jones<br>Sedimentation patterns in an urbanised embayment: Oatley Bay, Sydney   | \$6,604 |
| 07/077  | A/Professor Brian Jones<br>Sedimentation rates in the Tamar estuary   | \$4,866 |
| 07/114P | Professor John Morrison<br>Eutrophication of Lake Illawarra, NSW, as observed through sediment diatom frustule assemblage changes over time | \$3,840 |

### Engineering

|        |  |         |
|--------|--|---------|
| 07/116 | Dr Long Nghiem<br>Removal of heavy metals and radionuclides from mining impacted water | \$8,326 |
|--------|--|---------|

### GeoQuest Research group

|        |  |          |
|--------|--|----------|
| 07/075 | Dr Dianne Jolley<br>The use of radioactive <sup>75</sup> Se to unravel the intracellular fate of selenium in the tissues of marine organisms | \$21,272 |
|--------|--|----------|

### ISEM

|         |   |         |
|---------|---|---------|
| 07/163P | Dr Yue Zhao<br>Study of content and profile of impurities in MgB <sub>2</sub> thin films by RBS and ERDA, and their influence on the structure and physical properties for applications in superconducting electronic devices | \$9,297 |
|---------|---|---------|

### Materials Engineering

|        |   |         |
|--------|---|---------|
| 07/030 | Dr Zhixin Chen<br>Energy-filtered TEM imaging of nano-precipitates in low Mn steels | \$3,794 |
|--------|---|---------|

### Physics

|        |   |          |
|--------|---|----------|
| 07/091 | Dr Michael Lerch<br>IBIC studies of detectors for synchrotron x-ray dosimetry | \$12,556 |
|--------|---|----------|

University of Wollongong Total \$151,434

# Summary of experiments at ISIS

AINSE coordinates funding for Australia's membership of ISIS. This facility, situated in Oxfordshire in the United Kingdom, is the most powerful pulsed neutron source in the world. Normally the membership fee is paid with the assistance of the Australian Research Council's Linkage Infrastructure Equipment and Facilities Fund, and supplemented with contributions from universities, ANSTO and AINSE. As our application to the ARC was unsuccessful we were unable to pay the \$400,000 membership fee to ISIS. The Director of the facility very kindly offered to accept applications from Australian researchers for 2007 and as a result of this 32 days were awarded to 12 proposals from 7 groups.

|   |   |
|---|---|
| Aldridge Dr L P ANSTO<br>Interlayer and interparticle water in clays  | 5 |
| Forrester Dr J University of Newcastle<br>Structure of PZN-PT single crystals   | 3 |
| Gray Dr E M Griffith University<br>Powder diffraction studies under high deuterium pressure   | 6 |
| He Dr L University of Queensland<br>Interaction between Rubisco and SDOBS at an air-water interface   | 2 |
| Kisi Dr E H University of Newcastle<br>In-situ electric field study of PZN-PT crystals  | 2 |
| Muransky Dr O ANSTO<br>Combined in-situ neutron diffraction and acoustic emission investigation of the deformation processes in AZ series magnesium alloys        | 3 |
| White Professor J W Australian National University<br>The effect of solution pH on the interaction between poly(silicic) acid and DMPC at the air-water interface | 2 |
| White Professor J W Australian National University<br>Mechanisms of shear stability in emulsions  | 2 |
| White Professor J W Australian National University<br>Co-surfactancy of oil-soluble and water-soluble surfactants in emulsion stabilisation                       | 2 |
| White Professor J W Australian National University<br>The role of reverse micelles in emulsion stabilisation  | 2 |
| Zhang Dr Z ANSTO<br>Understanding of the pseudo-symmetry in lanthanide tantalates   | 3 |
| Other proposals from European researchers with Australian Collaborators   |   |
| Finlayson Dr T R University of Melbourne<br>Development of internal strains during compression of Al-Si alloy Al-7Si-0.4Mg  | 3 |
| Howard Dr C J ANSTO<br>Strain analysis of high pressure phase transitions in perovskites  | 2 |

Publications relating to research at ISIS

Paradowska A M; Price J W H; Ibrahim R; Finlayson T

*Neutron diffraction evaluation of residual for several weld arrangements and comparison with fitness-for-purpose assessments*

Transactions of the ASME - Journal of Pressure Vessel Technology 130(1) 1-7 2008

Price J W H; Ziara-Paradowska A M; Joshi S; Finlayson T; Semetay C; Nied H

*Comparison of experimental and theoretical residual stresses in welds: The issue of gauge volume*

International Journal of Mechanical Sciences, 509(3) 513-521 2008

Griffiths J R; Finlayson T R; Fitzpatrick M E; Oliver E C; Wang Q G

*The partition of stresses in Al-Si metal matrix composites*

6th AINSE/ANBUG Neutron Scattering Symposium 23 2007

Finlayson T R; Griffiths J R; Viano D M; Fitzpatrick M E; Oliver E C; Wang Q G

*Stresses in the eutectic silicon particles of strontium-modified A356 castings loaded in tension*

Shape Casting: The Second International Symposium, eds. P N Crepeau, M Tiryakioglu and J Campbell, (TMS (The Minerals, Metals and Materials Society)) 127-134 2007

Finlayson T R; Griffiths J R; Viano D M; Fitzpatrick M E; Oliver E C; Wang Q G

*The partition of stresses in Al-Si-based metal matrix composites*

Proceedings of the 31st Annual A&NZIP Condensed Matter and Materials Meeting', eds. A Barnhoorn, J D FitzGerald, I Jackson and T J Senden (Australian Institute of Physics Paper 7 3pp 2007 ([http://www.aip.org.au/wagga2007/2007\\_7.pdf](http://www.aip.org.au/wagga2007/2007_7.pdf)) ISBN 978-0-9598064-9-6)

Forrester J S; Kisi E H

*Monoclinic  $PbZn_{1/3}Nb_{2/3}O_3 - 8\%PbTiO_3$  at 4 K*

Acta Crystallogr C 63(12) i115-i118 2007

Kisi E H; Forrester J S; Howard C J; Ibberson R M

*Search for the x-phase in poled PZN-PT using very high resolution single crystal neutron diffraction*

J Phys: Condens Matter 19 232201 2007

Gray E MacA; Smith R I; Pitt M P

*Time-of-flight neutron powder diffraction with a thick-walled sample cell*

J Appl Cryst 40 399-408 2007

Middelberg A P J; He L; Dexter A F; Shen H-H; Holt S A; Thomas R K

*The interfacial structure and Young's modulus of peptide films having switchable mechanical properties*

J R Soc Interface 5 47-54 2008

Middelberg A P J; He L; Dexter A F

*Young's modulus of a switchable peptide film*

34th American Chemical Society National Meeting Boston 19-23 August 40 2007

Muránsky O; Carr D G; Šittner P; Oliver E C; Dobroň P

*In-situ neutron diffraction studies of the pseudoelastic-like behaviour of hydrostatically extruded Mg-Al-Zn alloy*

Materials Science Forum 571-572 2008 107-112

Henderson M J; Rennie A R; Hawley A M; White J W

*Swelling of a mesostructured zirconium oxide film*

Physica B 385-386(1) 713-715 2006

<http://dx.doi.org/10.1016/j.physb.2006.05.305>

Perriman A W; Henderson M J; Holt S A; White J W

*Effect of the air-water interface on the stability of beta-lactoglobulin*

J Phys Chem B 111(48) 13527-37 2007

Zank J; Reynolds P A; Jackson A J; Baranyai K J; Perriman A W; Barker J G; Kim M-H; White J W

*Aggregation in a high internal phase emulsion observed by SANS and USANS*

Physica B 385-286(1) 776-779 2006

<http://dx.doi.org/10.1016/j.physb.2006.06.081>

Zhang Z; Howard C J; Kennedy B J; Knight K S; Zhou Q

*Crystal structure of  $Ln_{1/3}NbO_3$  ( $Ln = Nd, Pr$ ) and phase transition in  $Nd_{1/3}NbO_3$*

J Solid State Chem 180 1846-1851 2007

Zhang Z; Lumpkin G R; Howard C J; Knight K S; Whittle K R; Osaka K

*Structures and phase diagram for the system  $CaTiO_3 - La_{2/3}TiO_3$*

J Solid State Chem 180 1083-1092 2007

# Publications

Notification of the following papers incorporating results from AINSE supported projects was received by AINSE in 2007. This list may not be a comprehensive list of all publications arising from AINSE supported work nor does it necessarily relate to Awards held in 2007.

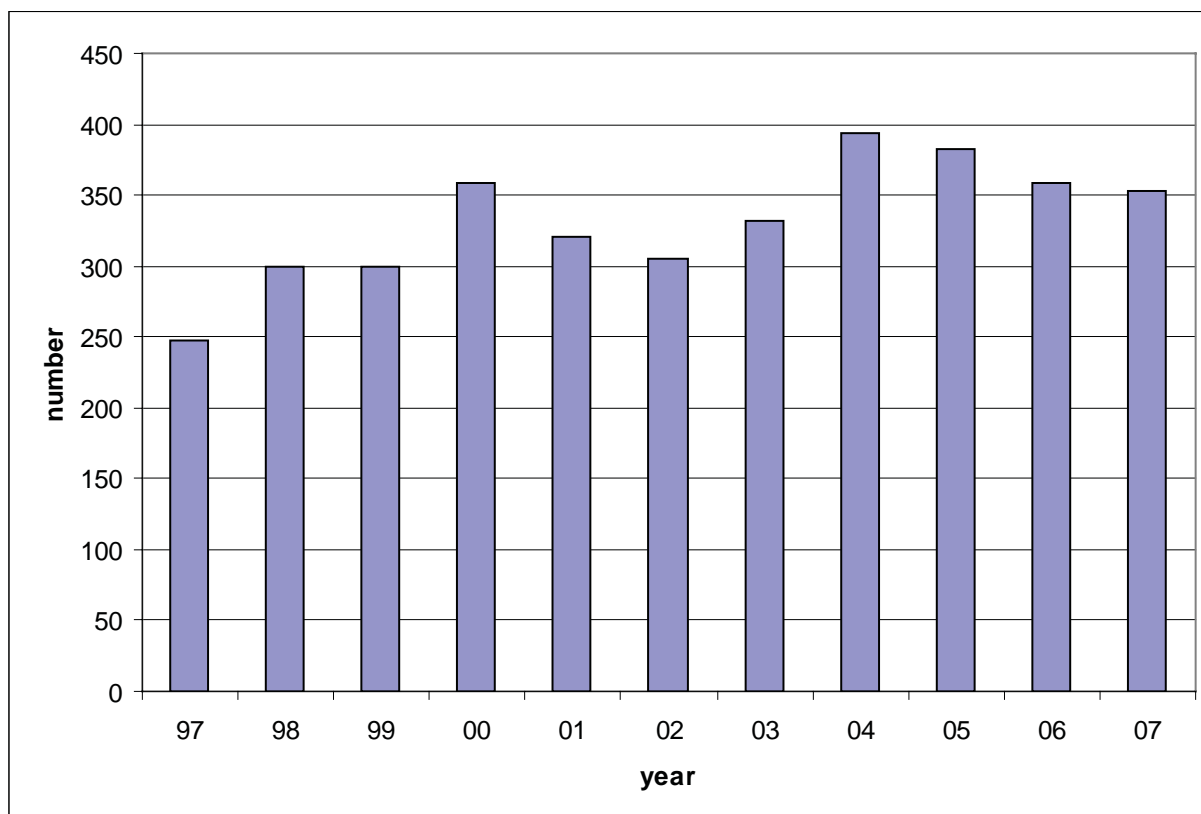
The publications are listed in university order under the name of the chief investigator, in bold. Where the chief investigator is not an author the name is in brackets. Publications arising from AINSE Postgraduate Research Awards (PGRA) are also listed.

The references are as supplied by the chief investigator in the Annual Progress Report and other notifications provided to AINSE. The Progress Reports for AINSE Awards are published on our home page.

The format of the journal references is as follows: abbreviated name of journal, volume, page number, year of publication ISSN.

The format of Conference papers is generally: conference name, page, poster or abstract number, month year, ISSN.

The graph below shows the total number of publications by year of publication



| Project Number                | Chief Investigator<br>Coauthors  | Title of Publication   | Reference  |
|-------------------------------|--|--|--|
| <b>University of Adelaide</b> |  |  |  |
| 07/048                        | Siddiqui H; Fluin J; Gell P;<br>Hancock G  | Late Holocene water quality and organic enrichment in Mundic Creek wetland, lower River Murray floodplain, South Australia   | Quatern Int 167-168 Supplement 383 2007  |
| 07/049                        | Skinner R; Fluin J; Cann J;<br>Harrison J  | A multiproxy palaeoecology reconstruction of the mid-Holocene to present salinity, marine incursions and flow regime of Lake Alexandrina and the Goolwa channel, South Australia | Quatern Int 167-168 Supplement 390 2007<br>ISSN 1040-6182  |
| 07/049;<br>07/056P            | Nicholson E D; Krull E S;<br>Smernik R J; Zawadzki A;<br>Gell P A; <i>et al</i> (Fluin J)        | Environmental change in the coastal wetlands near Adelaide, Australia  | Quatern Int 167-168 Supplement 306 2007<br>ISSN 1040-6182  |
| PGRA                          | Natt A C; Haberle S;<br>Jacobsen G   | Preliminary paleolimnological data from a Santiago Island coastal lagoon, Galapagos Archipelago, Ecuador   | Quatern Int 167-168 Supplement 302 2007<br>ISSN 1040-6182  |
| PGRA                          | Pearce S V; Linton V M   | Residual stresses in high strength, thick section steel welds  | MECA SENS IV Conference on Stress Evaluation 249 September 2007  |
| 07/124                        | Prescott J R; Creighton D F  | Thermoluminescence spectra of quartz from single crystals  | 5th Australian Conference on Nuclear and Complementary Techniques of Analysis & 9th Vacuum Society of Australia Congress 268 November 2007 0 9758434 2 7 |
| 95/066;<br>95/067;<br>05/136  | Prescott J R; Williams F M;<br>Hunt C D  | Comparison of TL multiple aliquot, single grain GLSL, SAR and C-14 ages for the Puritjarra, Australia, rock shelter  | Quatern Geochron 2 344-349 2007  |
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| Project Number   | Chief Investigator<br>Coauthors   | Title of Publication   | Reference  |
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| Project Number | Chief Investigator<br>Coauthors   | Title of Publication  | Reference   |
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## University of Technology Sydney

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# University Codes

| CODE | UNIVERSITY                         | CODE | UNIVERSITY                          |
|------|------------------------------------|------|-------------------------------------|
| ACU  | Australian Catholic University     | MUR  | Murdoch University                  |
| ADE  | The University of Adelaide         | NCT  | The University of Newcastle         |
| AKL  | The University of Auckland         | NSW  | The University of New South Wales   |
| ANS  | ANSTO                              | NTU  | Charles Darwin University           |
| ANU  | The Australian National University | OTA  | University of Otago                 |
| BAL  | University of Ballarat             | QLD  | The University of Queensland        |
| CAN  | University of Canterbury           | QUT  | Queensland University of Technology |
| CBR  | University of Canberra             | RMI  | RMIT University                     |
| CQU  | Central Queensland University      | SCU  | Southern Cross University           |
| CSU  | Charles Sturt University           | USQ  | University of Southern Queensland   |
| CUR  | Curtin University of Technology    | SWI  | Swinburne University of Technology  |
| DEA  | Deakin University                  | SYD  | The University of Sydney            |
| ECU  | Edith Cowan University             | TAS  | University of Tasmania              |
| FLI  | Flinders University                | UNE  | The University of New England       |
| GNS  | GNS Science                        | USA  | University of South Australia       |
| GRI  | Griffith University                | UTS  | University of Technology Sydney     |
| JAM  | James Cook University              | UWA  | The University of Western Australia |
| LAT  | La Trobe University                | UWS  | University of Western Sydney        |
| MAC  | Macquarie University               | VIC  | Victoria University of Technology   |
| MEL  | The University of Melbourne        | WOL  | University of Wollongong            |
| MON  | Monash University                  |      |                                     |

## Specialist Committees

|   |  |
|---|--|
| A | Archaeology and Geosciences            |
| B | Biomedical Science and Biotechnology   |
| E | Environmental Science                  |
| M | Materials – Properties and Engineering |
| N | Materials – Structures and Dynamics    |
| T | Nuclear Technology                     |