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AINSE Council

Member Organisations and Representation

Two Council Meetings were held in 1999

Organisation	Membership Commenced	Councillor	Meetings Attended
ANSTO	1958	Professor Helen Garnett	1
ANSTO, Environment		Professor Ann Henderson-Sellers	2
ANSTO, Materials		Dr Adam Jostsons	1
ANSTO, Nuclear Technology		Mr Ken Horlock	1
ANSTO, Physics		Dr Claudio Tuniz	1
ANSTO, Radiopharmaceuticals		Dr Stuart Carr	1
The University of Queensland	1958	Professor Ken Collerson	1
The University of New England	1958	Professor Brian Stoddart	0
The University of Sydney	1958	Professor Len Lindoy	2
The University of New South Wales	1958	Professor Hans Coster	2
The Australian National University	1958	Professor Trevor Ophel	2
The University of Melbourne	1958	A/Professor Ron Cooper, Vice President	2
University of Tasmania	1958	Professor Garth Paltridge	1
The University of Adelaide	1958	A/Professor Gerald Laurence	2
The University of Western Australia	1958	Professor Brian Stone	1
Monash University	1961	Professor Peter Kershaw	2
The University of Newcastle	1965	Professor Ron MacDonald, President	2
Flinders University of SA	1966	Professor Peter Teubner	2
La Trobe University	1966	Professor Paul Pigram	2
Macquarie University	1966	Professor Peter Bergquist	1
James Cook University	1970	Professor Richard Keene	1
University of Wollongong	1975	A/Professor Anatoly Rozenfeld	2
Griffith University	1975	A/Professor Evan Gray	2
Murdoch University	1985-1997 rejoined 1998	A/Professor Stephen Thurgate	2
University of Technology, Sydney	1988	Professor Evan Leitch	2
RMIT University	1988	Professor Dinesh Sood	1
Curtin University of Technology	1989	Professor Brian O'Connor	2
Central Queensland University	1991	A/Professor Graham Pegg	1
University of South Australia	1991	Professor Roger Smart	1
Swinburne University of Technology	1991	Dr Eddie Bakshi	0
Queensland University of Technology	1992	Dr Riaz Akber	2
University of Western Sydney	1993	Dr Robyn Crumbie	2
Victoria University	1994	Professor Vaughan Beck	0
Southern Cross University	1994	A/Professor Bill Boyd	0
The University of Auckland	1995	Professor Ralph Cooney	0
Charles Sturt University	1995	Dr Ken Page	2
Northern Territory University (non-voting)	1995	A/Professor Charles Webb	0
Edith Cowan University	1996	Professor Pat Garnett	0
University of Canberra	1996	A/Professor Andrew Cheetham	2
The University of Southern Queensland (non-voting)	1996	Professor Malcolm McKay	0
Deakin University	1997	Professor Pip Hamilton	0
University of Ballarat	1997	Mr Stafford McKnight	0
Secretary to Council (non-voting)		Dr Dennis Mather, AINSE	2

Organisation	Membership Commenced	Councillor	Meetings Attended
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Invited to attend Council Meetings

ANSTO, International Facilities (non voting)		Professor John Boldeman	1
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Alternate Representatives

The University of Auckland		Professor John Montgomery	1
The University of Auckland		Professor Paul Williams	1
Edith Cowan University		Dr Steven Hinckley	2
James Cook University		Dr Rob Robson	1
The University of New England		Dr Matthew Fewell	2
Northern Territory University		A/Professor David Parry	1
The University of Queensland		Dr Ian Gentle	1
Royal Melbourne Institute of Technology University		Dr Salvy Russo	1
University of South Australia		Dr William Skinner	1
Southern Cross University		Professor David McConchie	1
Swinburne University of Technology		Dr Peter Alabaster	1
Victoria University		Dr Leo Cussen	2
The University of Western Australia		Dr Terry Quickenden	1

Executive Committee

Four Executive Meetings were held in 1999

Councillor	Office/Position	Organisation	Meetings Attended
Professor Ron MacDonald	President	The University of Newcastle	4
A/Professor Ron Cooper	Vice – President	The University of Melbourne	4
Professor Hans Coster		The University of New South Wales	4
Dr Claudio Tuniz		ANSTO	3
Dr John Boldeman		ANSTO	3
Professor Helen Garnett		ANSTO	2
Dr Dennis Mather		AINSE	4

Invited to attend Executive

Dr Paul Pigram (E2/99)		La Trobe University	1
Dr Terry Quickenden (E3/99)		The University of Western Australia	1

AINSE Staff and Consultants

Scientific Secretary	Dr Dennis Mather BSc(Hons), PhD (UNSW), DipEd
Secretariat	Mrs Irene Parker
	Miss Nerissa Dawson
	Miss Fiona Coyle (July)
	Miss Melissa Farlow (from September)
	Mrs Sandy O'Connor (part-time)

Specialist Committees

The Scientific Secretary, AINSE, is an ex-officio (non-voting) member of all Committees

Accelerator Science Specialist Committee

Meetings Attended

Professor Trevor Ophel, Convenor	The Australian National University	2
Professor Dinesh Sood	RMIT University	2
Dr Rob Elliman	The Australian National University	2
Dr Claudio Tuniz	Director, Physics Division, ANSTO (ex officio)	0
Dr David Cohen	Physics Division, ANSTO	1
Dr John Boldeman	Director, ASRP Facility, ANSTO	1
Dr Nick Dytlewski (a)	Physics Division, ANSTO	2
Dr Peter Evans (a)	Physics Division, ANSTO	1

Accelerator Mass Spectrometry Specialist Committee

Professor Allan Chivas, Convenor	University of Wollongong	2
Professor Eric Colhoun	The University of Newcastle	2
Professor Ken Collerson	The University of Queensland	1
Dr Claudio Tuniz (ex officio)	Director, Physics Division, ANSTO	1
Dr Ewan Lawson	Physics Division, ANSTO	2
Mr John Head	University of Wollongong	1

AMS Advisory Group

Professor John Dodson	The University of Western Australia	-
Professor Dan Potts	The University of Sydney	-
Dr Karl Heinz-Wyrwoll	The University of Western Australia	-
Dr Ian Davidson	The University of New England	-
Dr Bill Budd	University of Tasmania	-
Dr Peter Nixon	The University of Queensland	-
Dr Mike Barbetti	The University of Sydney	1
Dr David Fink	Physics Division, ANSTO	2

Radiopharmaceuticals & Neutron Irradiation Specialist Committee

Professor Leon Kane-Maguire, Convenor	University of Wollongong	2
Dr Roger Martin	The University of Melbourne	2
Professor Ian McDougall	The Australian National University	1
Mr Eric Hetherington	Radiopharmaceuticals, ANSTO	1
Dr Andrew Katsifis	Radiopharmaceuticals, ANSTO	2
Mr Ken Suter	Radiopharmaceuticals, ANSTO	2
Dr Stuart Carr	Director, Radiopharmaceuticals, ANSTO	2

Engineering, Materials & Nuclear Technology Specialist Committee

Professor Roger Smart, Convenor	University of South Australia	1
Professor Brian Stone	The University of Western Australia	1
Professor Barry Muddle	Monash University	1
Dr Adam Jostsons	Director, Materials Division, ANSTO (ex officio)	0
Mr Ken Horlock	Director, Nuclear Technology, ANSTO (ex officio)	1
Dr Matthew Fewell (a)	University of New England	2
Dr George Collins (a)	Materials Division, ANSTO	1
Dr Lou Vance (a)	Materials Division, ANSTO	1
Dr John Bartlett (a)	Materials Division, ANSTO	1
Dr Richard Lowson (a)	Environment Division, ANSTO	1

ENG Advisory Group

Dr Dan Perera	Materials Division, ANSTO	1
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Environmental Science Specialist Committee

A/Professor Gerald Laurence, Convenor	The University of Adelaide	2
Professor David Smith	The University of Melbourne	1
A/Professor Rod Buckney	University of Technology, Sydney	1
Dr Andrew McMinn	University of Tasmania	1
Professor Ann Henderson-Sellers	Director, Environment Division, ANSTO (ex officio)	1
Dr Richard Lowson	Environment Division, ANSTO	2
Dr David Garnett	Becquerel Laboratories (ex officio)	2
Dr Paul Brown (a)	Environment, ANSTO	1
Dr Riaz Akber (invited for ENV2/99)	Queensland University of Technology	1
Dr Ross Jeffree (a)	Environment Division, ANSTO	1
Dr Rob Elliman (invited for ENV2/99)	Australian National University	0

Environmental Science Advisory Group

Dr Kathryn Prince	Environment Division, ANSTO	1
Dr Henk Heijnis	Environment Division, ANSTO	1
Dr David Cohen	Physics Division, ANSTO	0

Neutron Scattering Specialist Committee

A/Professor Evan Gray, Convenor	Griffith University	2
Professor Brian O'Connor	Curtin University	1
Professor John White	The Australian National University	1
Dr Claudio Tuniz	Director, Physics Division, ANSTO (ex officio)	0
Dr Margaret Elcombe	Physics Division, ANSTO	2
Dr Brett Hunter (a)	Physics Division, ANSTO	1
Dr Shane Kennedy (invited for NS1/99)	ANSTO	1
Dr Brendan Kennedy	The University of Sydney	2
Dr Erich Kisi (a)	The University of Newcastle	1

Plasma Fusion Specialist Committee

A/Professor Andrew Cheetham, Convenor	University of Canberra	2
Professor Robin Storer	Flinders University	1
A/Professor Rod Cross	University of Sydney	0
Professor Jeffrey Harris	Australian National University	1
Dr John Howard (a)	Australian National University	1

Radiation Science Specialist Committee

A/Professor Ron Cooper, Convenor	University of Melbourne	2
Mr David Sangster	AINSE (Honorary Fellow)	2
A/Professor David Hill	The University of Queensland	2
Dr David Webb	Australian Radiation Laboratory	1
Dr Claudio Tuniz	Director, Physics Division, ANSTO (ex officio)	0
Dr Wayne Garrett	Physics Division, ANSTO	1
Dr Dimitri Alexiev (a)	Physics Division, ANSTO	2
Mr Gavin Gant (invited for RAD2/99)	Physics Division, ANSTO	1

Radiation Advisory Group

A/Professor Jan Gebicki	Macquarie University	-
A/Professor Doug Moore	The University of Sydney	-
Dr Roger Martin	The University of Melbourne	-
Dr Bob Anderson	The University of Auckland	-

Conference Planning Committees

The 22nd AINSE Plasma Science and Technology Conference – February 1999

A/Professor Andrew Cheetham, Conference Chairman	University of Canberra
Professor Jeffrey Harri	The Australian National University
A/Professor Rod Cross	The University of Sydney
A/Professor Robin Storer	Flinders University
Dr John Howard	The Australian National University
Dr George Collins	ANSTO
Dr Reynaldo Castillo	University of Western Sydney
Dr Dennis Mather	AINSE
Mrs Margaret Lanigan	AINSE

5th Symposium on Advances in Radiopharmaceuticals – February 1999

Dr Stuart Carr, Conference Chairman	ANSTO
Mr Eric Hetherington	ANSTO
Dr Andrew Katsifis	ANSTO
Dr Suzanne Smith	ANSTO
Professor Leon Kane-Maguire	University of Wollongong
Dr Roger Martin	Peter MacCallum Cancer Institute
Dr Dennis Mather	AINSE
Mrs Margaret Lanigan	AINSE

2nd Quaternary Dating Workshop – April 1999

Professor Allan Chivas, Conference Chairman	University of Wollongong
Dr Ewan Lawson	ANSTO
Dr Henk Heijnis	ANSTO
Dr Dennis Mather	AINSE
Mrs Irene Parker	AINSE

Nuclear Techniques of Analysis – November 1999

Dr David Cohen, Conference Chairman	ANSTO
Dr Rob Elliman	The Australian National University
A/Professor Peter Johnston	RMIT University
Professor John O'Connor	The University of Newcastle
Dr Soey Sie	CSIRO
A/Professor David Jamieson	The University of Melbourne
Professor Ron MacDonald	The University of Newcastle
Dr Dennis Mather	AINSE
Mrs Irene Parker	AINSE

1st AINSE Symposium on Neutron Scattering – Small Angle Scattering and Reflectometry Workshop – June 1999

A/Professor Evan Gray, Conference Chairman	Griffith University
Professor John White	The Australian National University
Dr Philip Reynolds	The Australian National University
Dr Dennis Mather	AINSE
Mrs Irene Parker	AINSE
	AINSE

Radiation 2000 – November 2000

A/Professor Ron Cooper, Conference Chairman	The University of Melbourne
Mr David Sangster	The University of Sydney
Professor Robert Gilbert	The University of Sydney
A/Professor David Hill	The University of Queensland
A/Professor Jan Gebicki	Macquarie University
Dr Dennis Mather	AINSE
Mrs Irene Parker	AINSE

Plasma 2000 – December 2000

A/Professor Andrew Cheetham, Conference Chairman	University of Canberra
A/Professor Brian James	The University of Sydney
Professor Jeff Harris	The Australian National University
Professor Robin Storer	Flinders University
A/Professor Gerald Woolsey	University of New England
Dr Dennis Mather	AINSE
Mrs Irene Parker	AINSE

18th Nuclear and Particle Physics Conference – December 2000

Dr Andrew Stuchbery, Conference Chairman	The Australian National University
A/Professor Laurie Peak	The University of Sydney
A/Professor Anthony Williams	The University of Adelaide
Dr Stuart Tovey	The University of Melbourne
Professor George Dracoulis	The Australian National University
Dr Brian Robson	The Australian National University
Dr John Boldeman	ANSTO
Dr Dennis Mather	AINSE
Mrs Irene Parker	AINSE

Environment Conference – April 2001

A/Professor Gerald Laurence, Conference Chairman	The University of Adelaide
Dr Julia James	The University of Sydney
Dr Richard Lawson	ANSTO
Professor John Morrison	University of Wollongong
Dr Dennis Mather	AINSE
Mrs Irene Parker	

International Congress of Radiation Research 2003 Conference – August 2003

Professor Martin Lavin, Conference President	Queensland Institute of Medical Research
A/Professor Ron Cooper	The University of Melbourne
Dr Roger Martin	Peter McCallum Cancer Institute
Dr Dieter Asmus	University of Notre Dame
Dr Suzanne Smith	ANSTO
Dr Dennis Mather	AINSE
Mrs Nola Miles-Clark	ICMS

Financial Statements as at 31 December 1999

AUDITORS' REPORT

TO THE MEMBER OF THE AUSTRALIAN INSTITUTE OF NUCLEAR SCIENCE AND ENGINEERING INCORPORATED

SCOPE

We have audited the attached special purpose financial report of the Institute for the financial year ended 31 December, 1998 as set out on schedules 1 to 10. The Institute's Executive Committee is responsible for the preparation and presentation of the financial report and the information contained therein, and have determined that the basis of accounting used is appropriate to the needs of the members. We have conducted an independent audit of the financial report in order to express an opinion to the members of the Institute on its preparation and presentation. No opinion is expressed as to whether the basis of accounting used is appropriate to the needs of the members.

The financial report has been prepared for distribution to members for the purpose of fulfilling the Executive committee's accountability requirements under the Institute's constitution. We disclaim any assumption of responsibility for any reliance on this report or on the financial report to which it relates to any person other than the members, or for any purpose other than that for which it was prepared.

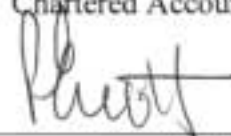
Our audit has been conducted in accordance with Australian Auditing Standards. Our procedures included examination, on a test basis, of evidence supporting the amounts and other disclosures in the financial report and significant accounting estimates. These procedures have been undertaken to form an opinion as to whether, in all material respects, the financial report is presented fairly in accordance with the basis of accounting described in Note 1 to the Financial Statements. (These policies do not require the application of all Accounting Standards and UIG Consensus Views).

The audit opinion expressed in this report has been formed on the above basis.

AUDIT OPINION

In our opinion the financial report presents fairly, in accordance with Accounting policies described in note 1 to the financial statements, as well as the provisions of the Associations Incorporation Act 1984, the financial position of the Institute, as at 31 December, 1998 and the results of its operations and cash flows for the year then ended.

Gardner Escott & Co
Chartered Accountants



P R Escott
Partner

Sydney, dated this

17TH

day, of FEBRUARY

2000

AUSTRALIAN INSTITUTE OF NUCLEAR SCIENCE AND ENGINEERING EXECUTIVE COMMITTEES 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 1999

COMMITTEE MEMBERS

Professor Ron McDonald, President
Assoc. Professor Ron Cooper, Vice President
Professor Hans Coster
Professor Helen Garnett
Dr John Boldeman
Dr Claudio Tuniz
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 \$293,656.00.

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

Dennis Mather

Dr Dennis Mather
Public Officer & Scientific Secretary

Dated this Seventeenth day of February 2000.

**THE AUSTRALIAN INSTITUTE OF NUCLEAR SCIENCE
AND ENGINEERING INCORPORATED
BALANCE SHEET
AS AT 31 DECEMBER 1999**

	Notes	31 Dec 1999 \$	31 Dec 1998 \$
Current Assets			
Cash	2	389 846	173 625
Receivables	3	2 081	24 166
Investments	4	3 102 895	2 844 843
Other	5	52 605	16 916
Total Current Assets		<u>3 547 427</u>	<u>3 059 550</u>
Non-Current Assets			
Plant and Equipment	6	61 638	46 108
Total Non-Current Assets		<u>61 638</u>	<u>46 108</u>
Total Assets		3 609 065	3 105 658
Current Liabilities			
Creditors			
	7	472 214	365 728
External Grants Received in Advance	8	329 419	232 356
Membership Subscriptions Received in Advance		-	8 200
Provisions for Employee Entitlements	9	15 058	10 423
Total Current Liabilities		<u>816 691</u>	<u>616 707</u>
Non-Current Liabilities			
Provisions for Employee Entitlements	9	16 872	7 105
Total Non-Current Liabilities		<u>16 872</u>	<u>7 105</u>
Total Liabilities		833 563	623 812
NET ASSETS		<u>2 775 502</u>	<u>2 481 846</u>
Equity			
Grants Reserve	15	2 061 174	1 460 181
Long Term Projects Reserve		500 000	500 000
Accumulated results of operations		214 328	521 665
TOTAL EQUITY		<u>2 775 502</u>	<u>2 481 846</u>

**THE AUSTRALIAN INSTITUTE OF NUCLEAR SCIENCE
AND ENGINEERING INCORPORATED
INCOME AND EXPENDITURE STATEMENT
FOR THE PERIOD ENDED 31 DECEMBER 1999**

	Notes	31 Dec 1999 \$	31 Dec 1998 \$
COST OF SERVICES			
Operating Expenses			
Wages & Salaries		171 059	157 521
Superannuation		26 323	24 058
AINSE Awards			
Students	10	252 666	275 429
Grants	10	957 601	822 452
Conference Subsidies		46 043	40 512
External Grants	12	568 285	885 457
Other Expenses	13	203 457	198 993
Total Operating Expenses		2 225 434	2 404 422
Operating Revenue			
Membership Subscriptions		1 795 700	1 719 500
External Grants	12	521 666	803 729
Interest Received		153 886	134 796
Profit on sale of assets		4 442	5 804
Other	14	43 396	16 988
Total Operating Revenue		2 519 090	2 680 817
Surplus for the year		293 656	276 395
Accumulated funds brought forward		521 665	572 051
Funds Available		815 321	848 446
Less: transfer to Reserves			
Grants Reserve	15	600 993	326 781
Accumulated results of operations at end of financial year		214 328	521 665

**THE AUSTRALIAN INSTITUTE OF NUCLEAR SCIENCE
AND ENGINEERING INCORPORATED
STATEMENT OF CASH FLOWS
FOR PERIOD ENDED 31 DECEMBER 1999**

Notes	31 Dec 1999 \$	31 Dec 1998 \$
Inflows/(Outflows)	Inflows/(Outflows)	Inflows/(Outflows)
CASH FLOWS PROVIDED BY (USED IN) OPERATING ACTIVITIES		
Inflows:		
Receipts from members	1 852 981	1 685 250
Receipts from grants	618 729	625 000
Interest received	115 059	134 796
	2 586 769	2 445 046
Outflows:		
Grant expenditures	(1 474 595)	(1 673 850)
Payments to suppliers and employees	(613 305)	(482 602)
	(2 087 900)	(2 156 452)
Net cash flows provided by (used in) operating activities	498 869	288 594
16		
CASH FLOWS PROVIDED BY (USED IN) INVESTING ACTIVITIES		
Outflows:		
Plant and equipment	(27 667)	(7 317)
Net cash flows provided by (used in) investing activities	(27 667)	(7 317)
Net increase in cash held	471 202	281 277
Cash at beginning of reporting period	3 018 468	2 737 191
Cash at end of reporting period	3 489 670	3 018 468

“For the purposes of the Statement Of Cashflows, the cash balance as at 31 December 1999 comprises Cash-Operating, Money Market and Other Deposits. A reconciliation of cash at the end of the reporting period to the Balance Sheet is set out as follows:

Balance Sheet	Cash	389 846	173 625
	Investment	3 102 895	2 844 843
Cash Flow Statement		3 492 741	3 018 468

**THE AUSTRALIAN INSTITUTE OF NUCLEAR SCIENCE
AND ENGINEERING INCORPORATED
NOTES TO AND FORMING PART OF THE ACCOUNTS**

1.Statement of accounting policies

(a) Basis of accounting

These financial statements are a special purpose financial report prepared in order to provide accounts which satisfy the requirements of the Institute's constitution and the Associations Incorporation Act NSW to prepare accounts. The Executive Committee has determined that the Institute is not a reporting entity and therefore, as there is no requirement to apply Accounting Standards and other mandatory professional reporting requirements (Urgent Issues Group Consensus Views) in the preparation and presentation of these statements, they have been adopted only to the extent shown in Note 1 to the accounts.

The statements have been prepared in accordance with the requirements of the Associations Incorporation Act. The statements are prepared on an accrual basis of accounting. They are based on historic costs and do not take into account changing money values, or except where specifically stated, current valuations of non-current assets.

The Executive Committee has, however prepared the financial report in accordance with all Australian Accounting Standards with the following exceptions:

- AAS1 Profit and Loss or other operating statements
- AAS22 Related party disclosures
- AAS30 Accounting for employee entitlements

The accounting policies have been consistently applied, unless otherwise stated. The following is a summary of the significant accounting policies adopted by the Institute in the preparation of the financial statements.

(b) Depreciation of property, plant and equipment

Property, plant and equipment are stated at cost and depreciated over their useful lives using the straight line method.

(c) Employee Entitlements

Recreation Leave and Long Service Leave entitlements are provided for annually.

(d) Inventories

As at 31 December 1999 AINSE did not hold any inventory.

(e) Membership subscriptions

Membership subscriptions are paid to the Institute by its members.

(f) Grants

All grant monies received have been treated as a balance sheet item under the heading of 'Grants Received In Advance'. As money is expended on the grants the equivalent amount of expenditure is drawn down from the balance sheet to grants income.

Notes to the Financial Statements

	31 Dec 1999	31 Dec 1998
	\$	\$
2. CASH		
Operating Account	389 346	173 125
Petty Cash	500	500
	<u>389 846</u>	<u>173 625</u>
3. RECEIVABLES		
Trade Debtors	2 081	24 166
	<u>2 081</u>	<u>24 166</u>
4. INVESTMENTS		
Cash Deposit Account	1 102 895	2 844 843
Term Deposit Account	2 000 000	-
	<u>3 102 895</u>	<u>2 844 843</u>
5. OTHER CURRENT ASSETS		
Prepayments	4 001	4 067
Interest Accrued	48 605	12 849
	<u>52 605</u>	<u>16 916</u>
6. PLANT AND EQUIPMENT		
Plant & Machinery		
Costs	64 318	59 585
Additions/(Disposals)	23 245	4 733
Accumulated Depreciation	49 166	37 014
Closing Written Down Value	<u>38 397</u>	<u>27 304</u>
Motor Vehicles		
Costs	21 734	21 600
Additions/(Disposals)	2 338	134
Accumulated Depreciation	831	2 930
Closing Written Down Value	<u>23 241</u>	<u>18 804</u>
Total	<u><u>61 638</u></u>	<u><u>46 108</u></u>

Notes to the Financial Statements

	31 Dec 1999	31 Dec 1998
	\$	\$
7. CREDITORS		
Accruals	472 214	365 728
	<u>472 214</u>	<u>365 728</u>
8. EXTERNAL GRANTS RECEIVED IN ADVANCE		
AINSE ARC AMS Grant '98 - UWA	20 551	47 450
AINSE ARC AMS Grant '95 - UNSW	-	4 020
AINSE ARC AMS Grant '96 - UWA	-	1 701
AINSE ARC N/S Grant '96	0	21 947
AINSE ARC N/S Grant '98	65 139	150 000
AINSE ARC SIMS Grant '96	-	7 238
AINSE ARC N/S Grant '99	243 729	-
AINSE ISIS Grant	-	-
	<u>329 419</u>	<u>232 356</u>
9. PROVISIONS FOR EMPLOYEE ENTITLEMENTS		
Current		
Recreation Leave	15 058	10 423
Non-Current		
Long Service Leave	16 872	7 105
	<u>31 930</u>	<u>17 528</u>
10. AINSE AWARDS		
AINSE AWARDS - Students		
Lucas Heights Costs	100 536	96 765
University Travel and Equipment	14 680	23 643
Stipends	123 750	131 250
Ainse Winter School	13 700	23 771
	<u>252 666</u>	<u>275 429</u>
AINSE AWARDS - Grants		
Lucas Heights Costs	847 260	724 222
Minor Equipment and Materials	18 463	20 458
Travel and Accommodation	91 834	77 262
University Costs	-	415
Other Costs	45	95
	<u>957 601</u>	<u>822 452</u>
11. SEGMENT REPORTING		
The Institute operates in the research sector providing funds for research to members within Australia and New Zealand.		

Notes to the Financial Statements

	31 Dec 1999	31 Dec 1998
	\$	\$
12. EXTERNAL GRANTS		
AINSE ARC AMS Grant '95 - UNSW		
Grant Revenue	4 020	5 360
Grant Expenditure		
Lucas Heights Costs	4 020	5 360
Total Expenditure	4 020	5 360
AINSE ARC AMS Grant '96 - UWA		
Grant Revenue	1 701	-
Grant Expenditure		
Lucas Heights Costs	1 701	-
Total Expenditure	1 701	-
AINSE ARC AMS Grant '97 - UWA		
Grant Revenue	-	298 937
Grant Expenditure		
Lucas Heights Costs	3 615	325 190
University Travel and Accomodation	708	305
Contract Labour/Consultancies	-	30 170
Total Expenditure	4 323	355 665
AINSE AMS Grant '98 - UWA		
Grant Revenue	26 899	102 550
Grant Expenditure		
Lucas Heights Costs	26 899	102 550
Total Expenditure	26 899	102 550
AINSE ARC N/S Grant '96		
Grant Revenue	21 947	39 639
Grant Expenditure		
Equipment and Materials	13 408	39 639
Contract Labour/Consultancies	8 539	-
Total Expenditure	21 947	39 639
AINSE ARC SIMS Grant '96		
Grant Revenue	7 238	32 242
Grant Expenditure		
Contract Labour/Consultancies	24 519	32 242
Total Expenditure	24 519	32 242

Notes to the Financial Statements

	31 Dec 1999	31 Dec 1998
	\$	\$
12. EXTERNAL GRANTS (cont.)		
AINSE ARC ISIS Grant '98		
Grant Revenue	375 000	325 000
Grant Expenditure		
Lucas Heights Costs	400 015	350 000
Total Expenditure	400 015	350 000
AINSE N/S Grant '98		
Grant Revenue	84 861	-
Grant Expenditure		
Lucas Heights Costs	-	-
Equipment and Materials	30 660	-
Contract Labour/Consultancies	54 201	-
Total Expenditure	84 861	-
Reconciliation		
Total External Grants Revenue	563 733	803 729
less transferred to Grants Received In Advance (Balance Sheet)	42 067	-
External Grant Revenue (Income & Expenditure Statement)	521 666	803 729
Represented by:		
Total Grant Expenditure (Income & Expenditure Statement)	568 285	885 457
Amount to be met by AINSE	46 619	(81 728)
External Grants Expenditure	521 666	803 729

Notes to the Financial Statements

	31 Dec 1999	31 Dec 1998
	\$	\$
13. OTHER EXPENDITURE		
Conference Management	55 663	36 622
Publications and Promotions	14 665	12 225
Meetings and Committees	64 308	60 089
AINSE Secretariat		
Audit Fees and Bank Charges	5 609	3 703
Depreciation	16 579	17 850
Advertising and Printing	1 551	9 459
Office Supplies	3 562	4 683
Postage and Telephone	7 517	6 787
Insurance	9 905	8 681
Entertaining	1 375	2 553
Books and Software	1 000	1 674
Office Equipment Repairs	1 776	9 388
Administration and Staff Training	665	3 026
Other Travel	11 183	8 512
Building Maintenance	-	43
Vehicle Expenses	3 609	3 924
Miscellaneous	4 490	9 774
Total AINSE Secretariat	<u>68 821</u>	<u>90 057</u>
Total Other Expenditure	<u><u>203 457</u></u>	<u><u>198 993</u></u>
14. OTHER INCOME		
Conferences	16 240	16 185
Miscellaneous	27 156	803
	<u>43 396</u>	<u>16 988</u>
15. MOVEMENT IN RESERVES		
Grants Reserve		
Transfer 2000/1999 research grants committed	<u>600 993</u>	<u>326 781</u>

Notes to the Financial Statements

	31 Dec 1999	31 Dec 1998
	\$	\$
16. RECONCILIATION OF OPERATING RESULT WITH CASHFLOWS FROM OPERATIONS		
Surplus for the year	293 656	276 395
Movements in Balance Sheet		
(Increase)/Decrease in Receivables	22 085	(24 138)
Increase/(Decrease) Creditors	106 486	252 304
(Increase)/Decrease Accrued Interest	(38 827)	-
(Increase)/Decrease Prepayments	67	(1 357)
Increase/(Decrease) Employee Entitlements	14 402	(20 827)
Increase/(Decrease) Other Current Liabilities	(8 200)	(27 100)
Increase/(Decrease) Grants Received in Advance	97 063	(178 729)
	<u>193 076</u>	<u>153</u>
Non-Cash Items		
Depreciation	16 579	17 850
Gain on sale of asset	(4 442)	(5 804)
	<u>12 137</u>	<u>12 046</u>
Net cash provided by (used in) operating activities	<u><u>498 869</u></u>	<u><u>288 594</u></u>

AINSE Postgraduate Research Awards

To nominate 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 tax-free supplement for up to 3 years, the award gives additional access to ANSTO's world-class facilities and expertise. The stipend is \$7500 pa and \$5500 is provided towards the costs involved in using Lucas Heights facilities. Travel and accommodation costs are also awarded to enable students to work at Lucas Heights.

Usually 6 to 8 awards are made each year.

Eight new AINSE postgraduate research projects supported by an award commenced during 1999. Through its post-graduate research award scheme, AINSE has now helped train 159 students in aspects of nuclear science and associated techniques of analysis. Many more students have been assisted with their PhD research by gaining access to Lucas Heights facilities through AINSE Grants awarded to their supervisors. Council believes that one of the most valuable roles fulfilled by AINSE is the provision of these AINSE post-graduate awards.

Projects Supported During 1999

The self assembly of phospholipid dispersions

Karen Aberdeen (nee Gunton) Chemistry, The University of Queensland
Commenced 2/3/98

Human impact & natural climate variability: their impact on the landscape

Ainsley Atkinson (nee Noakes) Environmental Science, The University of Wollongong
Commenced 1/2/99

An investigation of the formation & early annealing of fission tracks in apatite

David Belton Earth Sciences, The University of Melbourne
Commenced 04/03/96

Nutrient cycling in a tropical macrotidal environment

Megan Coles Mathematical & Physical Sciences Northern Territory University
Commenced 30/5/99

Biominalisation in caves

Annalisa Contos (nee Dixon) School of Chemistry, The University of Sydney
Commenced 23/2/99

Fine resolution AMS ¹⁴C chronology for the Greater Lake Bolac lunette-lake sediment sequence

Ellyn Cook Geography & Environmental Science, Monash University
Commenced 1/3/98

An environmental record of the last quarter of a million years from eastern Australia

Nicola Franklin Geography, The University of Sydney
Commenced 2/3/98

The elucidation of hysteresis in metal hydride (MH) systems using the embedded atom model (EAM)

Iain Fulton Applied Physics, Curtin University
Commenced 31/3/99

Donor-acceptor compounds as potential radiation activated cytotoxins

Alison Funston Chemistry, The University of Melbourne
Commenced 2/2/98

Studies of diffusion in II-VI semiconductor structures

Faramarz Gard Physics, Latrobe University
Commenced 1/1/99

Order in two dimensional magnetic systems

Darren Goossens Physics, Monash University
Commenced 04/03/96

Targeting of 125I-labelled ligands to the DNA of tumour cells

Tom Karagiannis Pathology, The University of Melbourne
Commenced 16/3/99

Investigation of interaction of artificial pinning centres with magnetic flux lines in high temperature superconductors

Damian Marinaro Radiation Physics Group The University of Wollongong
Commenced 8/1/99

The geoarchaeology of the Mun River floodplain in Thailand

Roger McGrath School of Resource Science & Management, Southern Cross University
Commenced 1/1/99

The hydrogen bonding & structure of bis-aminoacidato-metal(II)

Sandra Moussa Inorganic Chemistry, The University of Sydney
Commenced 11/03/97

Molecular modelling & experimental studies of mineral flotation systems

Anthony O'Dea Ian Wark Research Institute, University of South Australia
Commenced 16/01/96

Characterisation of reduced polypyridyl ruthenium species

Bradley Patterson Chemistry & Chemical Engineering, James Cook University
Commenced 1/3/98

Neutron scattering studies of metal-H/D systems

Mark Pitt Science & Technology, Griffith University
Commenced 01/02/96

Fundamental mechanisms in rf & dc nitriding plasmas

Jayson Priest Physics & Electronics Engineering, University of New England
Commenced 1/2/98

Geochemistry of ochres & rock art paints in the Selwyn Ranges North West Queensland

Malcolm Ridges Archaeology & Palaeoanthropology, University of New England
Commenced 01/06/97

Dynamic susceptibility of transition metal alloys by neutron scattering

David Robinson Physics, Monash University
Commenced 9/2/98

Structural evolution during the preparation and heating of nanophase zirconia gels and films

Peter Southon Materials University of Technology Sydney
Commenced 01/02/96

Chronology of contaminated sediments in Sydney Harbour

Stuart Taylor Environmental Geology & Geophysics, The University of Sydney
Commenced 01/01/97

A long-term terrestrial palaeoenvironmental record from isotope ratios of organic deposits

Jadranka Travas-Sejdic Chemistry, University of Auckland
Commenced 1 March 1997

A long-term terrestrial palaeoenvironmental record from isotope ratios

David Wheeler Geosciences, The University of Wollongong
Commenced 01/01/97

Summary of AINSE Grants

The primary purpose of AINSE Grants is to enable university researchers to meet costs associated with the use of nuclear science and technology facilities, 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 AINSE is able to achieve the high degree of flexibility and control needed to ensure the allocation of time on the facilities is fully utilised. AINSE Grants are very often 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 1999 included the following branches of science and engineering

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, information, 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

The list of projects and awards for 1999 are shown in the accompanying tables arranged in order of university, department and project number. The total amount of the grants 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.

Progress reports are published on our home page.

During 1999 one hundred and fifty nine projects were awarded to a value of \$1,268,555 involving all thirty-two member Australian universities. The following table shows the distribution of awards by university and by specialist areas.

University *	Specialist Committee *								Total Grants
	ACC	AMS	BIO	ENV	MAT	NS	PLA	RAD	
ADE		2	3	1					6
AKL	2	2		6	1			1	12
ANU		2	2						4
BAL				1					1
CBR	1			1			1		3
CQU				1			1		2
CSU				2					2
CUR					1	5			6
FLI					2				2
GRI	1					2		1	4
JAM		3				1			4
LAT		3		1					4
MAC	1	1		1					3
MEL	1		3		1	1		3	9
MON		3	1			4			8
MUR				2					2
NCT	1	2	1	2	1	1			8
NSW	3	1	4		1	3		1	13
NTU				1					1
QLD		1	1					2	4
QUT					1				1
RMI	5								5
SCU	1	2		1					4
SWI						2			2
SYD	5		1	1	1	2	1	2	13
TAS	1		2			1			4
UNE	5	1			2				8
USA				2	1				3
UTS	1	1			2				4
UWA	2		1	2			1		6
UWS								1	1
WOL	4	1	1	1	2			1	10
Grand Total	34	25	20	26	16	22	4	12	159

* Note: Full names of universities and specialist committees are given on page 49.

Australian National University

Archaeology & Natural History, DSE

99/020 **Mr Wallace Ambrose**
Chronology of early settlement in the Island Pacific: North Solomons Project \$4,020

Chemistry

99/019 **Professor Alan Sargeson**
Biological studies of metal ion cage complexes \$5,900

Geology

99/021 **Dr Patrick De Deckker**
The dating of the last glacial maximum and comparison with OSL dates \$10,050

Research School of Earth Sciences

99/018 **Professor Ian McDougall**
⁴⁰Ar/³⁹Ar age determination of rocks \$5,810

Australian National University Total \$25,780

Central Queensland University

Advanced Technologies and Processes

99/027 **Dr Xuehua Shi**
Fast DSP based data acquisition and processing system for multi-channel spectroscopy diagnostics on H-1NF \$4,675

Chemical & Biomedical Sciences

99/026 **Dr Vicky Vincente-Beckett**
Determination of chemical indicators of land-use practices in sediments from the Fitzroy River catchment and nearshore Keppel Bay (Queensland) \$2,630

Central Queensland University Total \$7,305

Charles Sturt University

Science and Technology

99/157S **A/Professor Kevin Robards**
A quantitative study of the antioxidant properties of phenolic compounds derived from *Olea europaea* (Olive) \$1,500

99/028 **Mr Paul Frazier**
Floodplain sedimentation rates on the Murrumbidgee River near Wagga Wagga. \$1,600

Charles Sturt University Total \$3,100

Curtin University of Technology

Applied Physics

99/032 **Dr Craig Buckley**
SANS investigation on the effects of thermal etching on the microstructure of sintered ceramics \$11,470

99/029 **Dr It-Meng Low**
Effects of grain size and bond-strength of CA6 on the fracture properties of alumina/calcium-hexaluminate (CA6) composites \$12,645

99/030 **Dr It-Meng Low**
Effects of spodumene additions on the phase developments and densification of *in situ* alumina/aluminium-titanate and alumina/calcium-hexaluminate (CA6) composites \$23,040

99/033 **Professor Brian O'Connor**
High temperature neutron diffraction studies of structural transformations during the oxidation of chalcocite \$8,860

99/034P **Professor Brian O'Connor**
Cubic and tetragonal polymorphs of gamma alumina associated with gibbsite calcination \$9,445

99/031P **Dr Craig Buckley**
Characterisation of the pore-size distribution and the pore morphology of alumina preforms using SANS and MSANS \$5,310

Curtin University of Technology Total \$70,770

Flinders University

Chemistry

99/035	Dr Joe Shapter Large scale STM investigations of DNA on gold substrates	\$3,295
99/036	Dr Justin Gooding A fundamental investigation of the immobilisation of enzymes onto self-assembled monolayers	\$3,295
Flinders University Total		\$6,590

Griffith University

Environmental Sciences

99/038	Dr Andrew Yiu-chung Chan The determination of primary and secondary contribution of the emission sources to the airborne particles in Brisbane	\$10,980
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Science

99/039	A/Professor Evan Gray <i>In situ</i> studies of D occupancy and microstructure in metal-deuterium systems	\$14,040
99/040	A/Professor Evan Gray Neutron irradiation induced order in a CuMn alloy	\$4,695
99/037	Dr Senake Perera Radiation Vulcanised Natural Rubber latex	\$3,520
Griffith University Total		\$33,235

IGNS

99/010	Dr Andreas Markwitz Investigation of ordered bubble structures produced by pulsed-plasma immersion ion-implantation (PI ³)	\$16,010
99/009	Dr Andreas Markwitz Compositional and depth profiling HERDA measurements of thin TiON films potentially used as solar absorbers	\$11,255
IGNS Total		\$27,265

James Cook University

Anthropology & Archaeology

99/041	Dr Alan Watchman Trace element analyses of rock shelter crusts	\$7,950
99/042	Dr Alan Watchman Chronology of painted pottery Boera, Papua New Guinea	\$3,350

Chemistry & Chemical Engineering

99/044	Dr Brian McCool Supramolecular complexation - neutron and x-ray diffractors and DFT computational studies	\$10,410
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Earth Sciences

99/043	Dr Piers Larcombe Sea-level determinations using oyster beds	\$4,020
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James Cook University Total		\$25,730
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La Trobe University

Archaeology

99/153SP	Dr David Frankel Dating bronze age Cyprus	\$10,200
99/158S	Dr Phillip Edwards From hunters to farmers in the east Jordan Valley	\$6,700
99/152S	Dr Richard Cosgrove Dating Aboriginal rainforest occupation	\$3,350

Physics

99/045	A/Professor John Riley Analysis of MBE grown semiconductors.	\$10,000
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La Trobe University Total		\$30,250
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Macquarie University

Chemistry

99/046	Professor Noel Cant PIXE/PIGME investigation of contaminants in automotive catalysts	\$7,200
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Physical Geography

99/155S	Dr Gary Brierley Antecedent controls on contemporary river character and behaviour at the base of the escarpment in Bega catchment south coast NSW Australia	\$10,100
99/156S	Dr Paul Hesse Sediment sources and budgeting in a small arid zone catchment Fowlers Gap NSW	\$5,760

Macquarie University Total		\$23,060
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Monash University

Physics

99/059	A/Professor John Cashion Structure, bonding and magnetic properties of sorbed metal species and novel materials	\$2,840
99/056P	Dr Trevor Hicks Disordered and low dimensional magnetic systems	\$16,670
99/054P	Dr Trevor Hicks Polarised neutron techniques and applications	\$11,640
99/055P	Dr Trevor Hicks Static and dynamic atomic and magnetic correlations in metallic alloys	\$33,775

Geography & Environmental Science

99/057	Dr James Peterson Deglaciation dates for New Guinea	\$9,660
99/058	Professor Peter Kershaw Late quaternary history of west Kalimantan	\$13,600
99/151S	Professor Peter Kershaw AMS dating of fine resolution records, Taynaya Bay Vestfold Hills Antarctic	\$8,710

Materials Engineering

99/159S	Dr George Simon The use of contrast variation in small angle neutron scattering to determine the domain sizes associated with sorbed water in cellulosic fibres	\$5,240
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Monash University Total		\$102,135
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Murdoch University

Physics and Energy Studies

99/060	A/Professor Stephen Thurgate SIMS determination of the association of Ca with Au(CN) ₂ on activated carbon	\$7,640
99/061	Dr Chris Lund SIMS Analysis of photodegradation in hydrogenated amorphous silicon solar cells	\$11,265

Murdoch University Total		\$18,905
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Northern Territory University

Mathematical and Physical Sciences

99/081P	A/Professor David Parry Nutrient cycling in a macrotidal environment	\$3,200
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Northern Territory University Total		\$3,200
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Queensland University of Technology

CIDC, Gardens Point Campus

99/086	Dr Ray Frost Kinetics of peptisation of modified alumina sols	\$22,260
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Queensland University of Technology Total		\$22,260
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Royal Melbourne Institute of Technology

Applied Physics

99/087	A/Professor Peter Johnston Multiple scattering and energy loss straggling studies of heavy ions in condensed matter for application in heavy ion elastic recoil detection analysis	\$12,820
99/146	A/Professor Peter Johnston Multiple scattering and energy loss straggling studies of heavy ions in condensed matter for application in heavy ion elastic recoil detection analysis	\$16,870

Chemical and Metallurgical Engineering

99/090P	Dr Liam Ward Investigation of effects of ion implantation on the properties of titanium nitride and related deposited coatings	\$18,830
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Communication & Electronic Engineering

99/088	Professor Dinesh Sood Ion beam modification & characterisation of thin films of TiB ₂ , NdFeB & SmCo	\$22,335
99/089	Professor Dinesh Sood Nano-phases produced by ion implantation in materials, their characterisation and improvements in corrosion behaviour at high temperatures	\$9,950

Royal Melbourne Institute of Technology Total \$80,805

Southern Cross University

Resource Science & Management

99/092	A/Professor David McConchie Trace elements in sedimentary phosphorites	\$6,205
99/148	A/Professor William Boyd Age and evolution of prehistoric river channels in N.E. Thailand	\$6,700
99/091P	Dr Leigh Sullivan Sulfur isotopes and sulfur cycling in coastal Holocene sediments	\$15,610
99/093	Mr Malcolm Clark Timing and source of organic cementation of coastal deposits, northern New South Wales	\$6,700

Southern Cross University Total \$35,215

Swinburne University of Technology

Centre for Applied Colloid & BioColloid Science

99/095	Dr Ian Harding Surface characterisation of mixed hydroxides	\$5,205
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Engineering and Science

99/094P	Mr Kerry McManus Study of the sound absorption/reflection properties of concrete and their relationship to the structural properties of concrete	\$4,215
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Swinburne University of Technology Total \$9,420

University of Adelaide

Horticulture, Viticulture and Oenology

99/003	Dr Graham Jones Determination of ¹⁴ C in Australian wines	\$10,720
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Mawson Graduate Centre for Environmental Studies

99/001	Professor Martin Williams Late quaternary environments in the Flinders Ranges, South Australia	\$5,360
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Nuclear Medicine

99/004	Dr Christopher Rowe Uptake of iodine-123-alpha-methyl-L-tyrosine in primary bone and other musculoskeletal tumours	\$5,750
99/005	Dr Christopher Rowe The development of subtype selective radiotracers for the study of M2 muscarinic receptors	\$6,540
99/006P	Dr Christopher Rowe The development of a carrier free synthesis of iodine-123-alpha-methyl-L-tyrosine ([¹²³ I]-IMT)	\$5,305

Physics/Mathematical Physics

99/002	E/Professor John Prescott Radioactive disequilibrium in low level uranium determinations and trace elements in natural quartz	\$3,895
University of Adelaide Total		\$37,570

University of Auckland*Auckland Cancer Society Research Centre*

99/015	Professor William Denny Reduction potentials of nitroaziridines	\$4,000
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Chemistry

99/013	A/Professor James Metson Composition and properties of TiOxNy solar absorber films	\$8,000
99/017	A/Professor James Metson Molecular ion formation in static SIMS	\$10,170

Environmental & Marine Science

99/012	Dr Gillian Lewis Identification of Microbial contamination sources in New Zealand oyster farms	\$9,770
99/011	Dr Carol Stewart A record of environmental changes in wetland cores from northern Hawke's Bay, New Zealand	\$3,800

Geography

99/149	Dr Stephen Swabey Rates of downcutting in the western North Island of New Zealand	\$4,115
99/014	Professor Paul Williams Quaternary glacial and volcanic activity of Mt Ruapehu, North Island, New Zealand	\$11,900
99/016	Professor Paul Williams Precision dating of young speleothems: part 2	\$1,600

Geology

99/007	Dr Paul Augustinus Timing of environmental change, Macquarie Harbour, Tasmania	\$4,200
99/008	Dr Paul Augustinus Exposure age dating of glacial sequences, New Zealand	\$12,750

University of Auckland Total		\$70,305
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University of Ballarat*School of Science (Geology)*

99/022	Dr Frank Bierlein Rare earth element systematics of mafic dykes in central Victoria: implications for gold mineralisation	\$3,600
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University of Ballarat Total		\$3,600
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University of Canberra*Applied Physics*

99/025	Professor Dudley Creagh Studies in the conservation of cultural heritage materials and of the environments in which they are stored	\$4,510
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CRC-LEME

99/023	Dr Leah Moore Characterisation of syn-diagenetic processes leading to base metal anomalies within the Beetle Creek formation, north west Queensland by sulphur isotopes	\$8,625
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Plasma Instrumentation Laboratory

99/024	A/Professor Andrew Cheetham Australian Fusion Research Group Collaboration	\$5,210
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University of Canberra Total		\$18,345
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University of Melbourne

Chemistry

99/049	A/Professor Peter Tregloan Induced dissociation of cobalt and chromium complexes	\$4,800
99/048	A/Professor Ronald Cooper Radiation chemical degradation of halocarbon contaminated waters	\$6,225
99/052	Dr Paul Mulvaney Small angle neutron scattering from nanoparticle crystals	\$4,715

Earth Sciences

99/047	Professor Andrew Gleadow The application of fission track analysis to fundamental problems in the Earth Sciences	\$9,400
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Fine Arts, Classical Studies

99/150S	Dr Elizabeth Pemberton Analysis of clays used in the manufacture of artefacts from a Hellenistic housing insula in North Syria	\$2,485
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Genetics

99/050	A/Professor James Camakaris Copper radioisotopes in the study of Alzheimers disease and Menkes disease	\$6,650
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Physics

99/051	A/Professor Alan Spargo Phase Retrieval in Experimental High Resolution Transmission Electron Microscopy (HRTEM)	\$13,110
99/108P	Dr Phillip McMahon Small angle neutron scattering from bed moist and processed brown coals	\$4,205

Trescowthick Research Laboratories

99/053	Dr Roger Martin Pulse radiolysis studies with DNA-binding radioprotectors	\$6,820
99/145	Dr Roger Martin Molecular modelling studies with DNA-binding radioprotectors	\$1,000

University of Melbourne Total	\$59,410
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University of New England

Archaeology

99/112	Dr Peter Grave Small sample PIXE/PIGME	\$6,045
99/114	Dr Peter Grave Establishing a chronometric framework for fortification earthworks in northern Thailand using AMS dating and analysis of core samples	\$8,040
99/115	Dr Peter Grave Elemental modelling of 5000 years of ceramic change in central Turkey	\$7,200
99/116	Dr Peter Grave Sourcing Agate & carnelian ornaments from south east Asia with PIXE/PIGME analysis	\$4,245
99/113	Dr Mike Morwood Kimberley Rock Art Analysis	\$12,830

Physics & Electronics Engineering

99/117	Dr Matthew Fewell Studies in low-pressure rf-plasma nitriding	\$14,135
99/118	Dr Matthew Fewell X-ray diffractometry of expanded austenite	\$1,200
99/119	Dr Matthew Fewell Quantification of SIMS sputter yields in the study of plasma-nitrided stainless steel	\$11,400

University of New England Total	\$65,095
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University of New South Wales

ADFA, Geography & Oceanography

99/147S **Dr Joachim Ribbe**
The distribution of radiocarbon in South East Pacific Ocean \$10,720

Cardiology, Prince of Wales Hospital, Randwick

99/079 **Dr Mark Pitney**
Endovascular radiotherapy to prevent restenosis after coronary stenting \$8,750

Electrical Engineering

99/074 **Dr Mark Keevers**
Experimental investigation of material quality effects upon recombination and transport in multilayer thin film silicon solar cells. \$10,000

Graduate School of Biomedical Engineering

99/076 **A/Professor Bruce Milthorpe**
Hot isostatic pressing of hydroxyapatite-metal fibre composites for compact bone replacement \$3,800

Physics

99/080 **Dr Gail Box**
Sydney aerosol characteristics, especially absorption coefficient \$7,400

99/071P **A/Professor Stewart Campbell**
Mechanochemical synthesis - structural transformations in iron spinel compounds \$5,450

99/075P **A/Professor Stewart Campbell**
Magnetic structures of novel rare-earth intermetallic compounds \$4,295

99/073P **Dr Erdong Wu**
Studies of metal hydride structures in Zr₅Al₃-D system \$6,215

99/072 **Dr Glen Stewart**
High speed Mössbauer investigation of rare earth based materials \$1,240

99/077 **Dr Wayne Hutchison**
Applications of nuclear magnetic resonance on oriented nuclei (NMRON) to solids \$1,510

Nuclear Medicine, Division of Medicine

99/078 **Dr Monica Rossleigh**
The preoperative assessment of patients with lung cancer using F-18 FDG and coincidence detection \$10,500

Pathology

99/070 **Professor Cameron Rolfe Howlett**
Ion beam modification of biomaterials and its effect on skeletal tissues and cells \$9,600

Polymer Science

99/144 **A/Professor Robert Burford**
New interpenetrating polymer networks \$3,200

University of New South Wales Total \$82,680

University of Newcastle

Chemistry

99/062 **A/Professor Ellak von Nagy-Felsobuki**
Clusters of sulfur and silicon \$1,900

Civil, Surveying & Environmental Engineering

99/065 **Dr Garry Willgoose**
Influence of radioactive minerals on crack development in chloritic schist \$7,495

Mechanical Engineering

99/069 **Dr Lyazid Djenidi**
LDV measurements in rough wall turbulent boundary layers \$7,275

99/064 **Dr Erich Kisi**
In situ study of ceramics under load and/or at high temperature \$23,500

Geography & Environmental Science

99/067 **Dr Russell Drysdale**
U-Th dating of Quaternary speleothems, Apuane Alps, northern Italy \$3,200

99/068 **Dr Russell Drysdale**
SIMS trace element analysis of Quaternary speleothems from NSW \$10,560

99/063 **Dr Stuart Pearson**
Holocene environments of the Paroo area (north west NSW) \$3,400

99/066	Professor Eric Colhoun AMS Dating Hunter valley and Be-10 dating Mourne mountains	\$11,660
University of Newcastle Total		\$68,990

University of Queensland

Department of Chemistry

99/083	A/Professor David Hill Radiation effects in models for natural and synthetic polymers	\$3,890
99/082	Dr Paul Bernhardt Single electron transfer reactions of multi redox centre complexes	\$6,670
<i>Dept of Nuclear Medicine, Royal Brisbane Hospital</i>		
99/085	Dr David Macfarlane In vitro evaluation of VIP(6-28) as a potential agent for VIP receptor scinitgraphy	\$13,870
99/084	Dr Gregory Webb Accretion rate of reefal microbialites by AMS ¹⁴ C dating	\$6,030

University of Queensland Total		\$30,460
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University of South Australia

Chemical Technology

99/121P	A/Professor David Davey The study of iron oxide as a gas sensing material	\$8,020
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Ian Wark Research Institute

99/122	Dr Andrea Gerson A SIMS investigation of the mechanism of copper activation of pyrite, pentlandite & pyrrhotite	\$10,080
99/120P	Professor Roger Smart Development of data analysis protocols in SIMS studies of adsorption and reaction at mineral surfaces	\$7,125

University of South Australia Total		\$25,225
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University of Sydney

Anatomy and Histology

99/107	Dr Denise Donlon Dietary analysis of 19th century juvenile human skeletal remains using trace element analysis	\$24,800
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Archaeology

99/101	Dr Peter Magee Investigating intra-regional exchange and production in the south east Arabian iron age	\$5,400
99/103	Dr Edward Robinson Characterisation of archaic Greek ceramics by PIXE-PIGME analysis	\$7,200
99/106	Dr Peter White Sourcing obsidian stemmed tool making, Garua Island, PNG	\$12,600

Centre for Advanced Materials Technology

99/102	Dr Andrew Ruys Hot isostatic pressing of functionally graded materials	\$2,100
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Chemistry

99/104	Dr Ronald Fenton Anion-cation interactions in substituted apatites	\$21,200
99/096	Professor Robert Gilbert Polymerisation of rubbery and water soluble polymers	\$2,000
99/099	Dr Julia James A study of radon as a tracer for air movement in caves	\$4,500
99/097P	Dr Brendan Kennedy Powder diffraction of metal oxides	\$14,200
99/098	Professor Donald Napper Gamma radiation induced polymerisation and grafting	\$1,400

Health Sciences

99/154S	Ms Dana Strain Is quinolic acid produced in the brain or spleen in response to gamma radiation	\$2,880
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Nicholson Museum

99/105	Ms Karin Sowada Characterisation of Levantine ceramic imports in Egypt during the third millennium BC by PIXE/PIGME analysis	\$5,400
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Physics

99/100	A/Professor Brian James Measurement of electric fields in the H-1 major national facility	\$3,975
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University of Sydney Total		\$107,655
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University of Tasmania

Chemistry

99/111	Dr Brian Yates Modelling of ligands for dopamine transporters	\$14,805
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Earth Sciences

99/110	Dr Jan Cent van Moort Chemical composition and paramagnetic defects of quartz	\$18,060
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Applied Science

99/109	Dr Scott Moss Lithium doping and neutron irradiation of Rb/C ₆₀ Buckminsterfullerene superconductor tapes for improved critical current density	\$2,000
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University of Tasmania Total		\$34,865
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University of Technology Sydney

Applied Physics

99/125	Dr Jurgen Schulte Surface characterisation of organic membranes on gold substrates	\$840
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Chemistry

99/126P	Dr Mike Stevens Adhesion improvement of metallised polymers for implantable electrode applications	\$14,900
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Environmental Sciences

99/124	A/Professor Gregory Skilbeck Pleistocene-Recent palaeoclimatic history of Myall Lake, NSW	\$10,050
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Materials Science

99/123	Dr Abhi Ray Retention of Cs and Sr in cemented zeolites	\$19,080
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University of Technology Sydney Total		\$44,870
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University of Western Australia

Geography

99/129	Professor John Dodson Holocene diatom and pollen palaeoecology of Lakes in southwest WA: A snapshot of long term environmental change	\$4,800
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99/130	Professor John Dodson Dating of Quaternary - late Tertiary record from Yallalie, SW Australia: a pilot study	\$1,600
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Medicine

99/131	A/Professor Harvey Turner Radiolanthanides for therapeutic nuclear oncology	\$9,330
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Zoology

99/127	Professor Don Bradshaw Determination of O-18 by activation in a particle accelerator	\$10,395
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99/128	Professor Don Bradshaw Measurement of body protein in native animals by ion-beam analysis	\$5,000
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University of Western Australia Total		\$31,125
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University of Western Sydney*Civic Engineering & Environment*

99/133P	Dr Loo-Teck Ng	The role of additives on the grafting of modified acrylates onto wool in the presence of gamma radiation	\$2,600
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Mathematics, Nepean

99/132	Dr Frederick Osman	Microwave reflectometry	\$4,320
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University of Western Sydney Total			\$6,920
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University of Wollongong*BHP Steel Institute*

99/138	Professor Hugh Brown	Functionalised polymer chains at surfaces and interfaces	\$11,400
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Engineering Physics

99/143	Dr Anatoly Rozenfeld	Study of radiation hardness of the semiconductor radiation sensors for medicine and industry	\$9,650
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Materials Engineering

99/134	Dr Hua Xia Ji	Ion - assisted surface modification of engineering ceramics	\$3,210
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Institute for Superconducting and Electronic Materials

99/135	Dr Mikhail Ionescu	Oxygen profile in Bi-2212 single crystals	\$2,500
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99/136	Dr Mikhail Ionescu	Ion implant of BSCCO 2212 single crystals	\$5,000
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99/137	Dr Joseph Horvat	Neutron irradiation of uranium-doped BSCCO tapes	\$2,000
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99/140	Mr Bernhard Zeimetz	Hot isostatic pressing of high temperature superconductors for current leads	\$1,200
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Materials Engineering

99/139	Dr Zhixin Chen	Formation and characterisation of welding fume	\$7,500
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Engineering Physics

99/142	Dr Anatoly Rozenfeld	Heavy ion beam testing of a silicon microdosimeter	\$8,775
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Geosciences

99/141	A/Professor Colin Woodroffe	Chlorine-36 and erosion on Lord Howe Island	\$5,100
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University of Wollongong Total			\$56,335
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Grand Total			\$1,268,555
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Research Projects undertaken at ISIS

Days Allocated

The Australian National University

J W White

Observation of silicate film growth at the solid-liquid interface 3

J W White

Post induction period sequential growth of silicate films 3

J W White

Growth of silicate films at the air-water interface under the influence of applied fields 3

J W White

Chain-length effects on interfacial structure of polyisobutylene-based surfactants 2

J W White

Effect of PIB structure on model high internal phase emulsion membranes 2

J W White

Interfacial structure of polyisobutylene-based surfactant mixtures 3

J W White

Effect of surfactant dilution on membrane structure in high internal phase emulsions 3

J W White

The study of the surface excess of protein solutions at the air/liquid interface 2

J W White

Swelling of mesoporous films grown at the air/water interface 3

J W White

Off-specular scattering from surfactants at the solid/liquid and air/liquid interfaces 4

Curtin University

G Parkinson

Structural basis for the unusual thermal expansion tensor of gibbsite 3

Griffith University

T Blach

Muon trapping by dislocations in LaNi₅ 4

E M Gray

Structural evolution of LaNi₅ under the influence of high temperature and high pressure deuterium 3

University of New South Wales

S J Campbell

Magnetic structures of the novel compounds R₃T₂₉Si₄₁₁B₁₀ 2

The University of Newcastle

E H Kisi

Single crystal elastic constants from polycrystalline diffraction 4

University of Queensland

I R Gentle

Determining the structure of self-assembled phospholipid mixed interfacial films 3

I R Gentle

Characterisation of lipid films assembled from tubular myelin 2

I R Gentle

Characterisation of the interaction of SP-B with phospholipid monolayers 3

University of Sydney

B J Kennedy

Structural phase transitions in strontium doped calcium titanates 4

B J Kennedy

High temperature tetragonal to cubic phase transitions in perovskite type oxides 2

B J Kennedy

Structural phase transitions in strontium doped calcium titanates 1

Publications

Notification of the following papers incorporating results from AINSE projects were received by AINSE in 1999. This list may not be a comprehensive list of all publications arising from AINSE-supported work. Advice concerning the availability of these papers and reports can be obtained from the AINSE office.

The publications are listed in university order under the name of the chief investigator, who is not necessarily the first author on the paper. 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 1999 are published on our home page.

Project Number	Chief Investigator (Co-Authors)	Title of Publication	Reference
<i>Australian National University</i>			
99/018	McDougall I Dammer D; Chivas A	Timing of weathering-induced alteration of manganese deposits in Western Australia: evidence from K/Ar and ⁴⁰ Ar/ ³⁹ Ar dating	Economic Geology 94 87-108 1999
99/018	McDougall I Feibel C	Numerical age control for the Miocene-Pliocene succession at Lothagam, a hominoid-bearing sequence in the northern Kenya Rift	Geological Society London 156 731-745 1999
99/018	McDougall I Harrison T	Geochronology and thermochronology by the ⁴⁰ Ar/ ³⁹ Ar method	2nd Edition, Oxford University Press 269 1999 New York
<i>Central Queensland University</i>			
98/007	Shi X Zhang S	The development of a DSP based system for processing the spectroscopy data on H-1NF	22nd Plasma Science & Technology Conference Handbook 102 1999 Canberra 1324-6313
<i>Curtin University of Technology</i>			
97/142	O'Connor B Li D; Gan B; Latella B; Carter J	Time-resolved studies of alumina ceramics processing with neutron and synchrotron radiation data	Advances in X-ray Analysis Denver X-Ray Conference 41 659-667 1997 Denver 1097-0002
98/010	Low I	Synthesis and properties of <i>in situ</i> layered and graded aluminium titanate/alumina composites	Australian Ceramic Society 2 250-256 1998
98/010	Low I Asmi D	Infiltration and physical characteristics of functionally-graded alumina/calcium-hexaluminate composites	AMPT'99 and IMC 16 1271-1279 1999 Dublin
98/010	Low I Asmi D; Kennedy S	Characteristics of a layered and graded calcium hexaluminate/alumina composite	Materials Letters 40 96-102 1999
98/010	Low I	Infiltration processing of novel layered and graded materials	Processing and Fabrication of Advanced Materials 6 1971-1984 1998
<i>Flinders University</i>			
99/036	Gooding J Losic D; Shapter J; Erokhin P; Short K	Combined atomic force microscopy (AFM), X-ray photoelectron spectroscopy (XPS) and quartz crystal microbalance (QCM) studies of glucose oxidase (GOX) immobilised onto self-assembled monolayer on the gold film	NTA/VSA Conference Proceedings 213-217 1999 Lucas Heights 1325-1694

Griffith University

98/013	Gray E Pitt M; Kisi E; Hunter B	Neutron diffraction study of the LaNi ₅ -D phase system during activation	Alloys and Compounds 293-295 118-123 1999
98/016	Sweatman D Tanner P; Dimitrijevic S; Li H; Prince K; Harrison H	SIMS analysis of nitrated oxides grown on 4H-SiC	Electronic Materials 28 109-111 1999
99/037	Perera S	Structure and dynamics of MG Rubber studied by dynamic mechanical analysis and solid state NMR	Polymer Science, Polym Phys ed 37 1141 1999
99/037	Perera S Hill D	Radiation chemical yields: G values	Polymer Handbook, 4th edition 481 1999

James Cook University

98/125	Keene R Anderson P; Anderson R; Hoffman M; Yeomans B; Patterson B	A study of the one-electron reduced forms of a series of ruthenium(II) diimine complexes	National Conference Inorganic Chemistry Division 1999 Wellington
99/043	Larcombe P Higley M	Resolving metre-scale oscillations in Holocene sea levels: some constraints for the cyclone-affected Great Barrier Reef shelf	PAGES-LOICZ Workshop (distributed by email) 1999 Hawaii

Macquarie University

96/198R	Ferguson R Brierley G	Downstream changes in valley confinement as a control on floodplain morphology, lower Tuross river, NSW, Australia - a constructive approach to floodplain analysis	Varieties of Fluvial Form 377-407 1999 0-471-97351-3
97/111	Tate M Norman M; Johnson S; Fanning M	Generation of tonalite and trondhjemite by subvolcanic fractionation and partial melting in the Zarza intrusive complex, Western Peninsula Ranges batholith, northwestern Mexico	Petrology 40 983-1010 1999
98/026	Cant N Patterson M; Angove D; Nelson P	The formation of benzene and chlorobenzene during the oxidation of toluene over rhodium-based catalysts	Applied Catalysis B: Environmental 20 123-131 1999

Monash University

95/R136	David B Hua Q; Tuniz C; Lawson E; Jacobsen G; Head J; Rowe M	New AMS determinations for Chillagoe rock art, Australia, and their implications for northern Australian prehistory	NEWS95 - International Rock Art Congress: North, East, West, South, 1995 IRAC 49 1995 Pinerolo
97/005R	David B Fullagar R	Investigating changing attitudes towards an Australian Aboriginal Dreaming mountain over >37 000 years of occupation via residue and use wear analyses of stone artefacts	Cambridge Archaeological 7(1) 139-144 1997
97/005R	David B Lourandos H	37 000 years and more in tropical Australia	Prehistoric society 63 1-23 1997
97/005R	David B Walt H; Lourandos H; Rowe M; Brayer J; Tuniz C	Ordering the rock paintings of the Mitchell-Palmer limestone zone (Australia) for AMS dating	The Artefact 20 57-72 1997
97/091	Finlayson T Ersez T; D'Souza C; Kennedy S; Chakoumakos B	Magnetic and structural properties of lightly doped La _{1-x} Sr _x MnO _{3+δ} (x ≤ 0.175)	23rd ANZIP Condensed Matter Physics Meeting 1999 Wagga
98/031	Hicks T Ersez T; Etheridge G	Investigations of magnetic anisotropy in the low temperature phase of Fe ₂ MnSi	Magnetism and Magnetic Materials 177-181 1351-1352 1998
98/031	Hicks T Campbell S; Booth J; Cadogan J; Rhyne J; Shinjo T; Wiesinger G	Transverse spin freezing in antiferromagnetic gamma-Mn ₉₀ Cu ₁₀	Magnetism and Magnetic Materials 177-181 1419-1420 1998
98/151R	David B Armitage R; Hyman M; Rowe M; Tuniz C et al	Radiocarbon determinations on Chillagoe rock paintings: small sample accelerator mass spectrometry	Records of the Australian Museum 50(3) 285-292 1998

98/151R	David B Armitage R; Rowe M; Hyman M; Lawson E	AMS radiocarbon determinations for northeastern Australian rock art: testing the regionalisation model of mid to late holocene change	Congresso Internacional De Arte Rupestre-International Rock Art Congress 33 1998 CD ROM
98/151R	David B Walt H; Wilson M; Lawson E; McNiven I	Rio de las Vacas shelter: new archaeological research in the southern rockies of New Mexico (USA)	AINSE Occasional Paper Internet Document 1998
98/151R	David B Lourandos H	Comparing long-term archaeological and environmental trends: North Queensland, arid and semi-arid Australia	The Artefact 21 105-114 1998
98/151R	David B Armitage R; Hyman M; Rowe M; Lawson E	How old is north Queensland's rock-art: a review of the evidence, with new AMS determinations	Archaeology in Oceania 34(3) 103-120 1999
98/151R	David B Lourandos H	Rock art and socio-demography in northeastern Australian prehistory	World Archaeology 30(2) 193-219 1998
98/151R	David B McNiven I; Bekessy L; Bultitude R; et al	More than 37 000 years of human occupation	Monash Publications in geography and environmental science 51 157-178 1998
98/151R	David B Lourandos H	Landscape as mind: land use, cultural space and change in north Queensland prehistory	Quaternary International 59 107-123 1999
98/151R	David B Wilson M	Re-reading the landscape: place and identity in NE Australia during the late holocene	Cambridge Archaeological 9(2) 163-188 1999
98/151R	David B	Ngarrabullgan: Geographical investigations in Djungan country, Cape York Peninsula	Monash Publications in Geography and Environmental Science 51 1998
PGRA	Goossens D Cussen LD	Optimum thickness for ³ He neutron polarising filters	Physica B 267-268 348-351 1999
PGRA	Goossens D Wildes A; Hicks T; Ritter C	Magnetic ordering above the spin-flop transition in MnPS ₃	23rd Condensed Matter Physics Meeting of the Australian & New Zealand Institutes of Physics 1999 Wagga
<i>Royal Melbourne Institute of Technology</i>			
98/045	Manory R Mollica S; Evans P; Collins G; Perry A	Some effects of MEVVA ion implantation on the tribological properties of TiN coatings	12th International Conference on Wear Materials 89 1999 Atlanta
<i>Southern Cross University</i>			
99/148	Boyd W Stubbs BJ; Averill C	The 'grasses' of the big scrub district of north-eastern New South Wales: a sedimentary record of late holocene grasslands in a subtropical forest landscape	Australian Geographer 30 331-336 1999
<i>Swinburne University of Technology</i>			
99/094P	McManus K Krezel Z	Recycled concrete products in the production of concrete sound barriers	3rd environmental engineering research event 1999 Victoria
99/094P	McManus K Evans P; Krezel Z; Alabaster P	Sound barriers for urban freeways using recycled concrete aggregate	Civil & Environmental Engineering Conference 1999 Thailand
99/094P	McManus K Krezel Z; Alabaster P; Bakshi E	Neutron scattering techniques in the examination of recycled aggregate concrete	Joint AINSE-ANU Symposium on Small Angle Scattering and Reflectometry Handbook 23 1999 Lucas Heights 0-9577217-1-4
<i>University of Adelaide</i>			
99/001	Williams M Cock B; Adamson D	Pleistocene Lake Brachina: a preliminary stratigraphy and chronology of lacustrine sediments from the central Flinders ranges, South Australia	Earth Sciences 46 61-69 1999

University of Auckland

98/166	Nichol S Chague-Goff C; Jenkinson A; Heijnis H	What are the signatures of natural catastrophic events (earthquake, flooding, tsunami) and anthropogenic activity in Ahuriri Lagoon, Hawke's Bay	Geological Society of New Zealand Inc 27 1999 Palmerston North 0-908678-80-0
98/168P	Brimble M Anderson R; Nairn M; Packer J	Reactions of semiquinones in aqueous solution. A comparison of the one electron reduction of Kalafungin and analogues with other semiquinones using pulse radiolysis	Chemical Society Perkin transactions II 475-479 1999
99/009	Markwitz A Bittar A; Tornquist J; Trompetter W; Dytlewski N; Cohen D	Depth profile analysis of thin TiO _x N _y films using standard ion beam analysis techniques and HERDA	NTA/VSA Conference Proceedings 24-30 1999 Lucas Heights 1325-1694
99/010	Markwitz A Johnson P; Gilbert P; Collins G; Short K; Cohen D; Dytlewski N	Nanoporous surfaces produced by plasma-immersion ion implantation of helium and oxygen	5th International Workshop On Plasma-Based Ion Implantation 1999 Japan
99/011	Stewart C Chague-Goff C; Goff J; Zachariasen J; Berryman K; Hollis C; Dawson S; et al	Signatures of catastrophic saltwater inundations (CSI) in northern Hawke's Bay	Geological Society of New Zealand Inc 26 1999 Palmerston North 0-908678-80-0
99/011	Stewart C Chague-Goff C; Goff J; Zachariasen J; Berryman K; Hollis C; Dawson S; et al	A record of environmental changes (subsidence earthquakes, tsunami) in northern Hawke's bay, New Zealand	International Geological Correlation Programme 65-67 1999 Hawaii

University of Ballarat

98/059	Bierlein F	Behavior of rare earth elements during hydrothermal alteration of meta-turbidites associated with mesothermal gold mineralization in central Victoria, Australia	19th International Geochemical Exploration Symposium 109-111 1999 Vancouver
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University of Melbourne

97/070	Plimer I Reeves S; Foster D	Exploitation of gold in a historic sewage sludge stockpile, Werribee, Australia: resource evaluation, chemical extraction and subsequent utilisation of sludge	Geochemical Exploration 65 141-153 1999
97/189R	Sagona A	Social identity and religious ritual in the Kura-Araxes cultural complex: some observations from Sos Hoyuk	Mediterranean Archaeology 11 13-25 1998
98/023	Kohn B Newsome D; Belton D; Brown R; Fink D	Landscape evolution and geomorphology in Australia with <i>in situ</i> ¹⁰ Be	8th International AMS Conference 1999 Vienna
98/063	Camakaris J Petris M; Mercer J	The cell biology of the Menkes disease proteins	Advances in experimental medicine and biol 448 53-66 1999 New York 0-306-46045-9
98/063	Camakaris J La Fontaine S; Firth S; Lockhart P; Brooks H; Mercer J	Functional analysis of the Menkes protein (MNK) expressed from a cDNA construct	Advances in experimental medicine and biol 448 67-82 1999 New York 0-306-46045-9
98/065	Tregloan P Funston A; McFadyen W	Pulse radiolysis studies in the development of a photoactivated cytotoxin	RACI Inorganic Division Conference 1999 Wellington 0-473-05724-7
99/050	Camakaris J White AR; Maulthaupt G; Maher F; Bellingham S et al	The Alzheimer's disease amyloid precursor protein modulates copper-induced toxicity and oxidative stress in primary neuronal cultures	Neuroscience 19 9170-9179 1999
99/050	Camakaris J Voskoboinik I; Strausak D; Greenough M; Brooks H et al	Functional analysis of the N-terminal CXXC metal-binding motifs in the human menkes copper-transporting P-type ATPase expressed in cultured mammalian cells	Journal Biol Chem 274 22008-22012 1999
99/050	Camakaris J Voskoboinik I; Mercer JF	Molecular mechanisms of copper homeostasis	Biochemical and Biophysical Communications 261 225-232 1999

99/050	Camakaris J La Fontaine S; Firth S; Englezou A; et al	Correction of the copper transport defect of Menkes patient fibroblasts by expression of the Menkes and Wilson ATPases	Journal Biological Chemistry 273 31375-31380 1998
99/050	Camakaris J Voskoboinik I; Brooks H; Smith S; Shen P	ATP-dependent copper transport by the Menkes protein in membrane vesicles isolated from cultured chinese hamster ovary cells	FEBS Letters 435 178-182 1998
99/108P	McMahon P Snook I; Moss S; Johnson P	Influence of fractal pores on the oxidation behavior of brown coal	Energy and Fuels 13 965-968 1999
99/108P	McMahon P Moss S	Derivation of infinite slit small angle scattering from porous surface and porous mass fractals	Appl Cryst 32 956-962 1999
99/150S	Pemberton E Jackson H	Analysis of clays from a hellenistic housing insula in North Syria	NTA/VSA Conference Proceedings 21-22 1999 Lucas Heights 1325-1694

University of New England

98/068	Fewell M Priest J; Baldwin M; Haydon S; Collins G; Tendys J	Low-pressure rf-plasma nitriding of austenitic stainless steel in an industrial-style heat-treatment furnace	Thin Solid Films 345 113-118 1999
98/068	Fewell M Priest J; Gollins G; Short K	Low-pressure rf plasmas: a versatile nitriding environment	22nd AINSE Plasma Science and Technology Conference Handbook 45-48 1999 Canberra 1324-6313
99/117	Fewell M Priest J; Short K; Collins G	Advances in PI^3 and low-temperature plasma nitriding	2nd Asian-Europ Internat Conference on Plasma-Surface Engineering 34 1999 Beijing
99/117	Fewell M Baldwin M; Kumar S; Priest J; Prince K; Short K	Plasma-nitrided AISI-316 stainless steel examined by scanning electron microscopy and secondary ion mass spectrometry	Thin Solid Films 345 108-112 1999
99/118	Fewell M Mitchell D; Priest J; Short K; Collins G	The structure of expanded austenite	2nd Asian-Europ Internat Conference on Plasma-Surface Engineering 81 1999 Beijing

University of New South Wales

98/080	Schindhelm K Hyvarinen J; Walsh W; Wielunski L; Clissold R; Swain M	Ion beam modified pyrolytic carbon as a material for the articulating surfaces of artificial joint replacements	45th Annual Meeting ORS 24 530 1999 California 0149-6433
98/080	Schindhelm K Hyvarinen J; Walsh W; Wielunski L	Tribology and fracture toughness of ion irradiated pyrolite and implications for its use in total joint replacements	21st World congress SICOT 34 1999 Sydney
98/082	Hutchison W Prandolini MJ; Harker SJ; Chaplin DH; Bowden GJ; Bleaney B	A low temperature study of antiferromagnetic $YbVO_4$ by NMR thermally detected by nuclear orientation	Hyperfine Interactions 120/121 215-219 1999
98/082	Hutchison W Nishimura K; Mori K; Ohya S; Muto S; Harker SJ; Chaplin DH	Magnetic anisotropy of Pm impurity in rare earth-nickel compound	Hyperfine Interactions 120/121 203-207 1999
99/070	Howlett R Wu Y; Zreiqat H; McFall W; McKenzie D	The effect of ion modification of commonly used orthopaedic materials on the attachment of human bone-derived cells	Society for Biomaterials 25 318 1999
99/070	Howlett R Zreiqat H; Evans P	Effect of surface chemical modification of bioceramic on the phenotype of human bone derived cells	Biomedical Materials Research 44 389-396 1999
99/070	Howlett R Wu Y; Zreiqat H; McFall W; McKenzie D	Alteration of cellular attachment to hopaedic metals by pulsed cathodic arc atomic deposition	Australian Society for Biomaterial 9th Annual Conference 44 1999
99/070	Howlett R Zreiqat H	Titanium substrata composition influences ostoblastic phenotype, in vitro study	Biomedical Materials Research 47 360-366 1999

99/071	Campbell S Wu E; Kaczmarek W; Hofmann M; Kennedy S; Studer A	Mechanochemical treatment of haematite- neutron diffraction investigation	23rd ANZIP Condensed Matter Physics Meeting TP10 1999 Wagga Wagga
99/071	Campbell S Wu E; Kaczmarek W; Hofmann M	Mechanochemical treatment of BaFe ₁₂ O ₁₉ – Mössbauer investigation	23rd ANZIP Condensed Matter Physics Meeting TP15 1999 Wagga Wagga
99/071	Campbell S Wu E; Kaczmarek W; Hofmann M; Kennedy S; Studer A	Mechanochemical treatment of haematite – neutron diffraction investigation	Metastable and Nanocrystalline Materials 2-6 121-126 1999
99/072	Stewart G Gubbens P	Induced thulium magnetisation in the 'green phase' Tm ₂ BaCuO ₅	Magn Mater 206 17-26 1999
99/075P	Campbell S Cadogan J; Zhao X; Hofmann M; Li H	Magnetic transitions in La _{1-x} Y _x Mn ₂ Si ₂ – Mössbauer investigation (4.2-520 K)	Physics 11 7835-7850 1999
99/075P	Campbell S Zhang H; Wu E; Kennedy S; Hofmann M; Li H; Studer A	The crystal and magnetic structure of Nd ₃ Co ₂₉ Si ₄ B ₁₀	23rd ANZIP Condensed Matter Physics Meeting TP3 1999 Wagga Wagga
University of Newcastle			
98/085	Kisi E Howard C	Structures of zirconia phases and their inter-relation	Key Engineering Materials 1-35 1998 Switzerland 0-87849-793-5
99/064	Kisi E Kennedy S; Howard C; Yuxiang M	Deformation of tetragonal zirconia studied by <i>in situ</i> neutron diffraction	PACRIM2, 2nd Meeting of Pacific rim Ceramic Societies 1996 Cairns
99/064	Kisi E Yuxiang M; Kennedy S	Ferroelasticity in zirconia ceramics	Materials 98 Institute of Metals & Mat Australasia Conference 681-686 1998 Wollongong 0-9588128-6-1
99/064	Kisi E Howard C	Measurement of single crystal elastic constants by neutron diffraction from polycrystals	Appl Cryst 32 624-633 1999
99/064	Kisi E Yuxiang M	<i>In situ</i> neutron diffraction study of ceramics under load	Materials 98 Institute of Metals & Mat Australasia Conference 693-698 1998 Wollongong 0-9588128-6-1
University of Queensland			
98/090	Hill D Forsythe J; Logothetis L; Whittaker A	The radiation chemistry of the copolymer of tetrafluoroethylene with 2,2-bis (trifluoromethyl)-4,5-difluoro-1,3-dioxole	Polymer Degradation and Stability 63 95-101 1999
98/091	Bernhardt P Flanagan B; Riley M	Metal-centered versus ligand-centered luminescence quenching in a macrocyclic copper(II) complex	Chemical Society, Dalton Transactions 3579-3584 1999 0020-1669
99/083	Hill D Preston C; Pomery P; Whittaker A	Thermal and radiation curing of phenylethynyl terminated macromers	High Perform Polym 11 453-465 1999
99/083	Hill D Forsythe J; Logothetis A; Pomery P; Whittaker A	The radiation chemistry of tetrafluoroethylene- co-perfluoro(methylvinylether): effects of oxygen and crystallinity	Appl Polym Sci 73 807-812 1999
99/083	Hill D Forsythe J; Logothetis A; Pomery P; Whittaker A	The use of crosslinking promoters on the γ -radiolysis of poly(tetrafluoroethylene-co- perfluoromethylvinylether): Part I	Appl Polym Sci 73 169-175 1999
99/083	Hill D Babanalbandi A; Hunter D; Kettle L	Thermal stability of poly(lactic acid) before and after γ -radiolysis	Polym Int 48 980-984 1999
99/083	Hill D Choi B; Ahn H; Choi E	Synthesis, characterization and ESR study of the gamma radiolysis of polyesters containing isomeric naphthalene links	Polym Int 48 956-962 1999
99/083	Hill D Forsythe J; Whittaker A; Logothetis A	The effect of temperature and a cross linking promoter on the γ -radiolysis of a perfluoroelastomer	Polym Int 48 1004-1009 1999

99/083	Hill D Cardona F; Pomery P; Whittaker A	A comparative study of the effects of UV- and γ -radiation on copolymers of acrylonitrile/butadiene	Polym Int 48 985-992 1999
99/083	Hill D Babanalbandi A	Radiation chemistry of arylpolyester blends with a polyalkanoate	Polym Int 48 963-970 1999
99/083	Hill D Lim M; Whittaker A	Water diffusion in HEMA-based hydrogels formed by γ -radiolysis	Polym Int 48 1046-1052 1999
99/083	Hill D Choi E; Kim K; O'Donnell J; Pomery P; Whittaker A	Synthesis, thermal and radiation sensitivities of some linear aromatic polyesters	Polym Int 48 971-979 1999
<i>University of South Australia</i>			
98/093	Gerson A Lange A; Prince K; Smart R	The mechanism of copper activation of sphalerite	Applied Surface Science 137 207-223 1999
99/120	Smart R Skinner W; Jasieniak M	TOF-SIMS and XPS evidence for sulfur-sulfur bonding in reacted sulfide surfaces	European Conference on Surface and interface Analysis Poster 1999 Spain
99/120	Smart R Jasieniak M; Prince K	SIMS studies of sulfide surface oxidation mechanisms	European Conference on Surface and Interface Analysis Poster 1999 Spain
<i>University of Sydney</i>			
97/018R	Barbetti M Hua Q; Jacobsen G; Zoppi U; Lawson E; Smith A; Lenh N	Recent tree ring analyses at the ANTARES AMS Centre	AINSE's 40th Anniversary Conference Proceedings 60 1998 Lucas Heights 0-9598472-9-4
97/018R	Barbetti M Hua Q; Worbes M; Head J; Levchenko V	Review of radiocarbon data from atmospheric and tree ring samples for the period 1945-1997 AD	IAWA 20 261-283 1999
98/101	Fenton R Moussa S; Kennedy B; Piltz R	Hydrogen bonding in cis-bis(L-alaninato)copper(II): a single crystal neutron diffraction study	Inorganica Chimica Acta 288 29-34 1999
98/103	Barford J Peters G; Maher W; Jenkinson A; McOrist G; Gomes V	A history of contamination and redistribution of selenium contamination in sediments of lake Macquarie, NSW	Pure and Applied Chemistry 69 2387-2401 1997
98/152R	Potts D Weeks L	An AMS radiocarbon chronology for the late Umm an-Nar type tomb at Tell Abraq	Tribulus 9/1 9-10 1999
99/097P	Kennedy B Field M; Hunter B; Vogt T	Temperature-dependent structural behavior of $\text{Bi}_{0.5}\text{Nd}_{1.5}\text{Ru}_2\text{O}_7$	Solid State Chemistry 144 467-469 1999
99/097P	Kennedy B Ismunandar; Hunter B	Phase transformation in CuRh_2O_4 : A powder neutron diffraction study	Materials Research Bulletin 34 135-143 1999
99/097P	Kennedy B Ismunandar; Hunter B	Observations on pyrochlore oxide structures	Materials Research Bulletin 34 1263-1274 1999
<i>University of Tasmania</i>			
97/137	McMahon P Treimer W; Wagenfeld H	Small angle neutron scattering from porous glassy carbons	ANSTO Experimental Reports 1997
98/110P	Van Moort J Pwa A	Geochemical signatures of acid insoluble residues of rock and regolith samples in relation to base metal mineralisation at the Wagga Tank deposit, Cobar, NSW	unpublished report prepared for cooperative research centre for landscape evolution and mineral exploration 67 1998
98/110P	Van Moort J Li X; Pwa A; Bailey G; Russell D; Butt C	The use of electron paramagnetic resonance spectra and geochemical analysis of acid insoluble residue of rock powders as sample medium in recognition of primary wall rock alteration patterns of gold mineralisation in regolith	3rd Australian Regolith Conference 67-76 1998 Kalgoorlie

98/110P	Van Moort J Pwa A; Bailey G; McQueen K	An integrated geochemical and paramagnetic exploration at the McKinnons gold deposit, Cobar, NSW	3rd Australian Regolith Conference 181-190 1998 Kalgoorlie
99/110	Van Moort J Pwa A	Geochemical evaluation of regolith anomalies at Lower Tank, Cobar, NSW	unpublished report for cooperative research centre for landscape evolution and mineral exploration 44 1999
99/110	Van Moort J Pwa A	Electron paramagnetic resonance (EPR) spectroscopy of rock powder in massive sulphide exploration, Rosebery mine area, western Tasmania, Australia	Geochem Explor 65 155-172 1999
99/110	Van Moort J Pwa A	Geochemical exploration using acid insoluble residues of rocks for volcanic-hosted massive sulphide deposits, Rosebery mine area, western Tasmania, Australia	Geochem Explor 66 55-69 1999
99/110	Van Moort J Pwa A	Electron paramagnetic resonance (EPR) signatures of acid insoluble residues of rock and regolith samples in relation to base metal mineralisation at the Wagga Tank deposit, Cobar, NSW	unpublished report prepared for cooperative research centre for landscape evolution and mineral exploration 21 1999
<i>University of Technology Sydney</i>			
97/195R	Skilbeck G Frankel E; Cramp A; Purser P; Tribble J	A record of coastal change preserved in high-stand littoral lakes from a stable passive margin (central eastern coast of Australia)	International Geological Correlation Program 437 Conference on Coastal Change on the Time Scale of Decades to Millenia in the Late Quaternary 195-202 1999 Hawaii
97/195R	Skilbeck G Frankel E; Cramp A; Tribble J	The holocene-pleistocene sedimentary record of Myal lakes, New South Wales	Abstracts 14th Australian Geological Convention 42 413 1998 Townsville
PGRA	Southon P Bartlett J; Finnie K; Woolfrey J; Ben-Nissan B; Kannangara G	The formation of zirconium hydroxide nanoparticles from aqueous nitrate solutions	Australian Ceramic Soc 35 7-12 1999
<i>University of Wollongong</i>			
97/121R	Nanson G Doyle C	Landscape stability, quaternary climate change and European degradation of coastal rivers in southeastern Australia	2nd Australian Stream Management Conference 2 473-479 1999 Adelaide
98/124P	Liu H Wang G; Bradhurst D; Dou S	Improvement of electrochemical properties of the spinel LiMn_2O_4 using a Cr dopant effect	Solid State Ionics 120 95-101 1999
99/141	Woodroffe C McLean R; Smithers S; Lawson E	Atoll reef-island formation and response to sea-level change: West Island, Cocos (Keeling) Islands	Marine Geology 160 85-104 1999

Performance Indicators for AINSE

- 1. Objective (1): to provide a mechanism for users in member organisations of AINSE to have access to major nuclear science and engineering and associated facilities at ANSTO and other agreed sites for research purposes** (for example, meet an acceptable level of the Universities' demand for access to such facilities.)

Key Performance Indicator KPI(1)

Percentage of the demand for access to facilities and services required by the Universities which is met through the award of AINSE Grants.

where:

“demand” is determined by the number of eligible projects applying for AINSE Grants.

[The number of eligible projects is determined by the number of applications for AINSE Grants after ineligible projects (as specified in the guidelines for preparing applications) have been taken out by the Secretariat.]

“facilities and services required by the Universities” is the list recommended by the AINSE Specialist Committees and approved by Council (the list is published each year in the Guidelines for preparing AINSE Grant applications).

“Universities” is taken to include all higher education institutions which are members of AINSE.

KPI(1) = (Number of projects awarded AINSE Grants for use of LHSTC facilities and services) divided by (number of eligible projects requesting use of LHSTC facilities and services) expressed as a percentage.

Past performance

Year	1994	1995	1996	1997	1998	1999
No. of applications	204	228	248	247	172	175
Grants awarded	173	201	207	201	147	159
KPI(1)	85%	88%	83%	81%	83%	91%
KPI(1) (excl. RIEF)	70%	69%	64%	66%	87%	91%

Note: KPI(1) reflects to a large extent AINSE's policy of providing some support for every worthy project without disadvantaging the best projects by under-funding them. It assumes that the AINSE Grants awarded are sufficient to achieve meaningful research outcomes in all cases. The AINSE Specialist Committees, in particular, have the responsibility of ensuring that all projects recommended for support are “worthy”. That is, they satisfy AINSE as to their high scientific merit, their scientific and technical feasibility, and the adequacy of plans, personnel and resources for their execution (ref: Guide-lines for the preparation of applications for AINSE Grants, Section 5). The Council has the ultimate responsibility for ensuring all Specialist Committees maintain these standards. The inclusion of projects funded under the RIEF Program should possibly be excluded since RIEF Grants are for developing research infrastructure. These Grants are included in the KPI for Objective 4.

Other Performance Indicators for Objective 1

Number of applications and Grants awarded as a percentage of the number of member universities (including RIEF funded grants)

Year	1994	1995	1996	1997	1998	1999
No. of universities	28	31	34	36	35	36
Applications/uni	7.3	7.4	7.3	6.9	6.9	4.9
Grants/uni	6.2	6.5	6.1	5.6	5.0	4.4

- 2 Objective (2) to facilitate graduate and undergraduate education and training experience utilising major nuclear science and technology facilities at ANSTO and other agreed sites** (for example, make a significant contribution to postgraduate training in nuclear science and technology.)

Key Performance Indicator KPI(2)

The number of University students awarded AINSE Postgraduate Research Awards as a percentage of those applying.

where:

Number of postgraduate students is determined by the number of eligible applications for AINSE PGRAs.

$KPI(2) =$ (Number of University students awarded AINSE APRAs) divided by (Number of University students applying for AINSE APRAs) expressed as a percentage.

Note: Many other postgraduate and Honours Year students gain training experience through AINSE Grants awarded to their supervisors but the degree of training is varied (significant supervision and training from qualified staff at the facilities is not guaranteed when students use the facilities and services) and the outcomes unknown. Expenditure on the undergraduate AINSE Winter School at ANSTO program is small in comparison with the AINSE PGRA scheme. The prime objective of the program is to encourage more students to undertake postgraduate education - which should be reflected in the number of future applications for AINSE PGRA's. The AINSE Postgraduate Research Award provides about the only measure of performance and outcome (ie: a PhD having a significant content of nuclear science and technology).

Past performance

Year	1994	1995	1996	1997	1998	1999
No. of PGRA applications	20	14	13	13	23	23
No. of PGRAs awarded	7	4 + 2*	6 + 3*	6 + 2*	6 + 2*	7 + 1*
KPI(2)	35%	43%	69%	62%	35%	39%

(Note*: Special graduate student awards without stipend)

Other Performance Indicators

The number of University students awarded AINSE Postgraduate Research Awards per member university of AINSE.

Year	1994	1995	1996	1997	1998	1999
No. of universities	28	31	34	36	35	36
Applications/uni	0.71	0.45	0.38	0.36	0.66	0.64
PGRAs/uni	0.25	0.19	0.26	0.22	0.23	0.25

The total number of students completing PhD theses who have used facilities and services made available through AINSE.

Information on the number of students completing PhD theses who used facilities through AINSE Grants awarded to their supervisors is now being sought in the annual progress reports. The numbers could possibly be expressed as a percentage of the total number of PhDs completed in the physical and biological sciences.

3 Objective (3) to encourage collaboration and cooperation between member organisations of AINSE in areas primarily related to nuclear science and engineering and their applications, for example, the number of meaningful collaborations arising from AINSE-supported projects.

Note: Meaningful collaborations can be measured by the number of joint publications, however, unless AINSE has been provided with a copy of the publication it is not always possible to identify the affiliations of the authors. It is intended to seek this information in the future by means of the annual Progress Reports. In the interim, since the main purpose of Objective (3) is to encourage collaborations between University researchers and ANSTO staff, a measure of collaboration (of a sort) can be obtained from the number of collaborative projects identified from application forms for AINSE Grants.

Key Performance Indicator KPI(3)

Interim KPI(3) = (Number of collaborative projects each year) divided by (Total number of AINSE supported projects) expressed as a percentage.

Where:

“collaborative projects” refers to AINSE Grants involving ANSTO and university staff as joint investigators (obtainable from Grant application forms).

Past performance

Year	1995	1996	1997	1998	1999
Collaborative projects	115	124	135	137	122
Total no. of projects	201	207	201	174	159
KPI(3)	57%	60%	67%	79%	77%

(Note: This indicator can be “forced” by giving preference to AINSE Grants that are collaborative - which is a condition in the case of RIEF grants for AMS projects and for use of the SIMS.)

Future performance indicator for objective 3

Number of papers naming ANSTO and university staff as joint authors published in refereed journals and conferences with ISBN numbers, etc. expressed as a percentage of Grants and PGRAs awarded.

- 4 Objective (4): to sustain and support the development of major nuclear science and technology facilities at ANSTO and other agreed sites for shared use by member organisations of AINSE**
(for example, funds raised for the development of facilities).

Key Performance Indicator KPI(4)

Funds raised for constructing and developing major nuclear science and technology facilities in Australia accessible to member organisations through AINSE expressed as a percentage of AINSE membership subscriptions.

Where:

“Funds” in this context means grants from external sources (such as RIEFP Grants) paid into the AINSE bank account. It excludes the value of in-kind contributions and funds administered through member organisations. It also excludes joint ANSTO/University Large Grants (for research equipment at ANSTO) originating from AINSE/ANSTO collaborations, etc. In the future, it will include contributions from the Long Term Projects Reserve.

KPI(4) = Total value of external grants for constructing and developing major facilities divided by annual membership subscriptions from ANSTO and the universities (expressed as a percentage).

Past performance

Year	1994	1995	1996	1997	1998	1999
External grants	\$ 540,000	\$ 445,000	\$ 795,000	\$610,000	\$600,000	\$496,864
Subscriptions	\$1,361,500	\$1,430,700	\$1,470,600	\$1,638,300	\$1,719,300	1,795,700
KPI(4)	40 %	31 %	54 %	37%	35%	28%

Other Performance Indicators

New major nuclear science and technology facilities in Australia for shared use by member organisations of AINSE developed with the support of AINSE (such as the \$8.7 million National Plasma Fusion Research Facility) but not paid into the AINSE bank account.

5 Overall Performance Indicator

The tangible benefits (expressed in financial terms) received by member universities of AINSE in return for membership subscriptions paid.

The indicator that has been used for many years by AINSE is the benefit/subscription ratio for determining subscriptions each year. This indicator incorporates the expenditure by AINSE in support of all activities undertaken by the universities under Objectives 1) to 4). It includes some measure of efficiency on a year to year basis in as much as AINSE does not generally pay ANSTO or the service provider until the access to facilities (or the results of sample analyses, etc.) have been provided. Since it does not reflect actual time on facilities or actual samples measured etc., it relies on the Specialist Committees, the Executive Committee and ultimately, Council, to ensure that the costs for use of facilities etc. are acceptable to the universities. It also incorporates decisions on how AINSE income is spent. For example, money spent on developing facilities at ANSTO is considered as a benefit shared equally between all universities.

AINSE KPI = Sum of [(Actual expenditure on AINSE Grants) + (Expenditure on Fellowships and PGRAs) +(expenditure on conference subsidies) + (expenditure on development of facilities)] divided by (Total Subscriptions paid by Universities).

Excluded from the KPI is expenditure on all administrative functions such as Secretariat operations (including salaries and superannuation), Council and committee meetings, conference management, publications and promotions, funds transferred to reserves, etc.

[Note: Many of the activities excluded from the KPI, such as Council meetings and publications, provide useful outcomes including networking and dissemination of knowledge. However, these outcomes are not easy to quantify and do not provide Councillors with tangible evidence that membership subscriptions are justified. They are therefore excluded. There is a strong incentive to keep administrative costs down. A balance has to be made between maintaining financial reserves earning enough interest to meet Secretariat salaries, etc, and drawing on those reserves to meet AINSE objectives defined by the KPI target.

The latest figures for this index are reproduced below.

Year	1993	1994	1995	1996	1997	1998	1999
AINSE KPI	3.09	2.67	2.75	3.86	3.35	3.92	3.98
KPI (without RIEF)	2.63	2.08	2.17	2.29	1.83	2.13	2.29
5 year average	3.00	2.96	2.91	3.15	3.16	3.33	3.58

(Note: The 5 year average for each university is used for determining its membership subscription and relates to the preceding 5 years.)

An acceptable benefit subscription ratio is 3.00 : 1.

The benefit subscription ratio should not be less than 2.00 : 1.

University Codes

Code	University	Code	University
ADE	University of Adelaide	NCT	University of Newcastle
AKL	University of Auckland	NSW	University of New South Wales
ANS	ANSTO	NTU	Northern Territory University
ANU	Australian National University	QLD	University of Queensland
BAL	University of Ballarat	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	University of Sydney
ECU	Edith Cowan University	TAS	University of Tasmania
FLI	Flinders University	UNE	University of New England
GRI	Griffith University	USA	University of South Australia
JAM	James Cook University	UTS	University of Technology Sydney
LAT	La Trobe University	UWA	University of Western Australia
MAC	Macquarie University	UWS	University of Western Sydney
MEL	University of Melbourne	VIC	Victoria University of Technology
MON	Monash University	WOL	University of Wollongong
MUR	Murdoch University		

Specialist Committees

ACC	Accelerator Science
AMS	Accelerator Mass Spectrometry
BIO	Radiopharmaceuticals & Neutron Irradiation
ENG	Engineering, Materials & Nuclear Technology
ENV	Environmental Science & Becquerel
NS	Neutron Scattering
PLA	Plasma Fusion
RAD	Radiation including ARL & Auckland