

Accelerator Science Project Publications 2010-11

Prizes

Books and Book Chapters

David Haberlah, Peter Glasby, Martin A.J. Williams, Steven M. Hill, Frances Williams, Edward J. Rhodes, Victor Gostin, Anthony O'Flaherty, Geraldine E. Jacobsen. 2010 "Of droughts and flooding rains": an alluvial loess record from central South Australia spanning the last glacial cycle. In Bishop, P. & Pillans, B. (eds), Australian Landscapes. Geological Society, London, Special Publications. 346, pp185-223. DOI:10.1144/SP346.11. ISBN-978-1-86239-314-1

Journals

M. Radhi, M. A. Box, G. P. Box, R. M. Mitchell, D. D. Cohen, E. Stelcer, M. D. Keywood. Size resolved mass chemical properties of dust aerosols from Australia's Lake Eyre Basin, *Atmos. Environ.*, 44 (2010) 3519-3528. [A]

David D. Cohen Jagoda Crawford, Eduard Stelcer, Vuong Thu Bac. Long Range Transport of Fine Particle Windblown Soils and Coal Fired Power Station Emissions into Hanoi between 2001 to 2008. *Atmos. Environ.*, 44 (2010) 3761-3769. [A].

Jamie L. Lovell, John Meadows and Geraldine E. Jacobsen. Upland olive domestication in the Chalcolithic Period: New ¹⁴C determinations from el Khawarij (Ajlun), Jordan. *Radiocarbon* 52(2-3) (2010) 364-371. [B]

M Radhi, M A Box, G P Box, D D Cohen, Size-resolved chemical composition of the September 2009 Sydney dust storm, *Air Quality and Climate Change* 44(2010)25-30.[Z].

Michael D Cheetham, Annabelle F. Keene, Wayne. D Erskine, Richard Bush, K. Fitzsimmons, Geraldine E. Jacobsen, Stewart Fallon. Resolving the Holocene alluvial record in south-eastern Australia using luminescence and radiocarbon techniques. *Journal of Quaternary Science* 25(7) (2010)1160-1168. [A]

Yiu-chung Chan*, Olga Hawas, Darryl Hawker, Peter Vowles, David D Cohen, Eduard Stelcer, Rod Simpson, Gary Golding, Elizabeth Christensen. The use of multivariate type composition data and wind data in the source apportionment of air pollutants. *Atmos Environ* 45 (2011) 439-449. [A].

Pandiyan Murugaraj, David Mainwaring, Nurra Ali Khelil, Ju Lin Peng, Rainer Siegele, Prashant Sawant, The improved electromechanical sensitivity of polymer thin films containing carbon clusters produced in situ by irradiation with metal ions, *Carbon* 48 (2010) 4230-4237.

Roza Bali, Rainer Siegele, Andrew T. Harris, Biogenic Pt uptake and nanoparticle formation in *Medicago sativa* and *Brassica juncea*, *J. Nanopart. Res.* 12 (2010) 3087-3095.

David D. Cohen, Eduard Stelcer, David Garton, Jagoda Crawford, Fine Particle Characterisation, Source Apportionment and Long Range Dust Transport into the Sydney Basin: A long term study between 1998 and 2009. *Atmospheric Pollution Research* 2 (2011) 182-189. [A].

Bilkis A. Begum, Swapan K. Biswas, Gauri G. Pandit, I.V. Saradhi, Shahida Waheed, Naila Siddique, Manikkuwatur C. S. Seneviratn, David D. Cohen, Andreas Markwitz and Philip K. Hopke. Long Range Transport of Soil Dust and Smoke Pollution in the South Asian Region. *Atmospheric Pollution Research* 2 (2011) 151-157. [A].

Philip Hopke, David D. Cohen, Application of receptor modelling methods. *Atmospheric Pollution Research* 2 (2011) 122-125. [A].

Roza Bali, Rainer Siegele, Andrew T. Harris, Phytoextraction of Au: Uptake, accumulation and cellular distribution in *Medicago sativa* and *Brassica juncea*, *Chemical Engineering Journal* Volume: 156(2) (2010) 286-297.

R. Bali, R. Siegele, A.T. Harris, Biogenic Separation, Accumulation and Cellular Distribution of Cu, Co, and Ni in *Medicago sativa* under Idealized Conditions. *Separation Science and Technology* 45(10) (2010) 1395-1401.

Y. Shiga, R.S.B. Greene, K.M Scott and E. Stelcer. Recognising terrestrially-derived salt (NaCl) in SE Australian dust. *Aeolian Research* (2011), doi:10.1016/j.aeolia.2011.02.003.

I. Graham, V. Nechaev, L. Sutherland, Z. Khin, S. Meffre, M. Ionescu, Gem corundum deposits of Primorye, Far eastern Russia: origin as xenocrysts from Miocene intraplate basalts, Proceedings of the 13-th Quadrennial IAGOD Symposium, ISBN 978-1-921399-35-0, page 414, (2010) [C]

P. Voudouris, I. Graham, V. Melfos, Z. Khin, L. Sutherland, G. Giuliani, A. Fallick, M. Ionescu, Gem corundum deposits of Greece: diversity chemistry and origins, Proceedings of the 13-th Quadrennial IAGOD Symposium, ISBN 978-1-921399-35-0, page 429, (2010) [C]

M. Minakshi, M. Ionescu, Anodic behaviour of Zn in Zn-MnO₂ battery using ERDA technique, Int. J. of Hydrogen Energy. 35, 7618, (2010) [B]

M. C. Guenette, M. D. Tucker, M. Ionescu, M. M. M. Bilek, D. R. McKenzie, Cathodic arc co-deposition of highly oriented hexagonal Ti and Ti₂AlC MAX phase thin films, Thin Solid Films 519, 766, (2010) [A]

M. Minakshi, A. Pandey, M. Blackford, M. Ionescu, Effect of TiS₂ additive on LiMnPO₄ cathode in aqueous solution, Energy & Fuels 24, 6193, (2010) [B]

B. R. Winton, M. Ionescu, C. Lukey, M. Wilson, I. P. Nevirkovets, S. X. Dou, Micro-patterned Surface Modifications of Poly(dimethylsiloxane) (PDMS) substrates for Tissue Engineering, Advanced Science Letters 4, 431, (2011) [B]

M. Minakshi, P. Singh, N. Sharma, M. Blackford, M. Ionescu, Lithium extraction-insertion from/into LiCoPO₄ in aqueous batteries, Ind. Eng. Chem. Res. 50, 1899, (2011) [B]

Kathryn H. Taffs, Brendan L. Logan and Jeff F. Parr and Geraldine E Jacobsen. (2010). The evolution of a coastal peatland at Byron Bay, Australia, using the siliceous microfossil record. In: Altered ecologies : fire, climate and human influence on terrestrial landscapes. Simon G. Haberle, Janelle Stevenson, Matthew Prebble. (eds). Terra Australis 32, 429-442. [Z]

Janelle Stevenson, Richard Gillespie, Geraldine Jacobsen, Stewart Fallon and Vladimir Levchenko. (2010) The archaic and puzzling record of Lake Xere Wapo, New Caledonia. In: Altered ecologies : fire, climate and human influence on terrestrial landscapes. Simon G. Haberle, Janelle Stevenson, Matthew Prebble. (eds). Terra Australis 32, 381-394. [Z]

K. Sowada, G. Jacobsen, F Bertuch and A. Jenkinson, (2010) The date of a mummified head in the Nicholson Museum, Sydney. The Bulletin of the Australian Centre for Egyptology, 21, 115-122. [Z]

Mark J. Hackett, James A. McQuillan, Fatima El-Assaad, Jade B. Aitken, Aviva Levina, David D. Cohen, Rainer Siegele, Elizabeth A. Carter, Georges E. Grau, Nicholas H. Hunt and Peter A. Lay. Chemical alterations to murine brain tissue induced by formalin fixation: Implications for biospectroscopic imaging and mapping studies of disease pathogenesis.. Analyst, June 2011, DOI: 10.1039/C0AN00269K [A].

Conferences

David Cohen (invited) Recent trends in fine particle characterisation source apportionment and back trajectory methods and how PIXE techniques are a key component of this. 12th International Conference on Particle Induced X-ray Emission and its Analytical Applications PIXE 2010, Guildford, UK, 28th June – 2nd July 2010

E. Abbey, J. Webster, G. Jacobsen, A. Thomas, G. Henderson, P. Reimer, J.C. Braga, G. Camoin, R. Beaman, A. Tudhope, T. Bridge, N. George. Morphological variation, composition and age of submerged reefs on the Great Barrier Reef. Australian Earth Sciences Convention, Canberra, 4-8 July 2010

R. Siegele, M.J Hackett, F. El-Assad, J.A McQuillan, E.A Carter, G.E Grau, N.H Hunt, D. Cohen, and P.A. Lay, Investigation of Cerebral Malaria Using STIM and μ -PIXE, International Conference on Nuclear Microprobe Technology and Applications 2010, Leipzig, 26.-20. July, 2010.

L.R. Karlson, R.S.B. Greene, K.M Scott and E. Stelcer. Transport of Aeolian dust west of the Lake Eyre Basin, Australia. International Conference on Aeolian Research (ICAR VII), Santa Rosa, Argentina 5-9 July 2010.

David D. Cohen (invited), Jagoda Crawford, Eduard Stelcer, Vuong Thu Bac. IBA techniques to determine long term fine particulate matter, its composition, sources and transport in Hanoi between 2001-08, International Conference on the Application of Accelerators in Research and Industry (CAARI-2010), Forth Worth, Texas, USA, 8-13 August 2010.

MAC Hotchkis and D Button. Mass Spectrometry with an ECR Ion Source. XIXth International Workshop on ECR Ion Sources, August 23-26, 2010, Grenoble, France.

Bilkis A. Begum, Swapan K. Biswas, Gauri G. Pandit, Shahida Waheed, Manikkuwadura C. S. Seneviratne, David D. Cohen, Andreas Markwitz, Philip K. Hopke.

Long Range Transport of Anthropogenic Pollution in the Asian Region, 29th Annual Conference of the American Association for Aerosol Research, Portland Oregon, USA, 25-29 October 2010.

David Cohen (keynote speaker). Role of nuclear analytical techniques in the field of environment, health and industry, National Seminar on Neutron Activation Analysis, Serpong, Indonesia, 2-3 November 2010.

M Boland, R. R. Rassool, D. Cohen, J. Dodson, D. Hinde, G. LeBlanc, N. Lobanov, G. Taylor. Australian Collaboration for Accelerator Science (ACAS), 19th Australian Institute of Physics Congress, Melbourne, Victoria, Australia, 5-9 December 2010.

Tony Mowbray, David Garton, Mick Mann, Andrew Downes, Shane Long, Peter Drewer, David Button
Multiple Stripper Gas Selections in a FN Tandem
Symposium of North Eastern Accelerator Personnel (SNEAP) – Paris, 20 - 24 September 2010

Tony Mowbray, David Garton, Peter Drewer, Kevin Ansary, Peter Bond, Ollie Evans
Improved Earthing of Column and Tubes in an FN Sized Tandem
Symposium of North Eastern Accelerator Personnel (SNEAP) – Paris, 20 - 24 September 2010

David Garton, Lab Report, Symposium of North Eastern Accelerator Personnel (SNEAP) – Paris, 20 - 24 September 2010

M. Minakshi, A. Pandey, M. Blackford, M. Ionescu, Delithiation of TiS₂ added olivine-type LiMnPO₄ in aqueous solution, International Symposium on Advances in Electrochemical Science and Technology, 2-4 December 2010, Chennai, India (best paper award)

J. Crawford, W. Zahoroowski D. D. Cohen, S. Chambers, E Stelcer, S. Werczynski,
Rapid estimation of daily fine aerosol loadings in the boundary layer using ground based radon-222 observations.
Cape Grim Annual Science Meeting, Aspendale, VIC, Australia, 9-10 December 2010.

Peter Bond, An Update on Dry Vacuum Pumping on the STAR Accelerator
ACAS - Workshop on Accelerator Feedback Systems – ANSTO, 13 – 15 December 2010

Michael Mann, Limitations of Cryopumps Recent Operating Issues with Xenon and Helium, solutions
ACAS - Workshop on Accelerator Feedback Systems – ANSTO, 13 – 15 December 2010

Peter Drewer, Good Optical Fibre Practice on the ANSTO Accelerators – lessons learnt
ACAS - Workshop on Accelerator Feedback Systems – ANSTO, 13 – 15 December 2010

David Button, The Development of IRMS++ and the Application of 3D Modelling Tools
ACAS - Workshop on Accelerator Feedback Systems – ANSTO, 13 – 15 December 2010

Tony Mowbray, Magnetic Field Controller for Bending Magnets
ACAS - Workshop on Accelerator Feedback Systems – ANSTO, 13 – 15 December 2010

Tony Mowbray, Multiple Stripper Gas Selector for the ANTARES Accelerator
ACAS - Workshop on Accelerator Feedback Systems – ANSTO, 13 – 15 December 2010

Michael Mann, An Improved Single Cathode Caesium Sputter Ion Source
ACAS - Workshop on Accelerator Feedback Systems – ANSTO, 13 – 15 December 2010

David Garton, Peter Drewer, Changed High Voltage Conditioning Methods for ANTARES
ACAS - Workshop on Accelerator Feedback Systems – ANSTO, 13 – 15 December 2010

David Cohen (invited), Accelerator Applications, Australian Collaboration for Accelerator Science, School for Accelerator Physics, ANSTO, Lucas Heights, Sydney, 13-17 December 2010

M. Ionescu, D. D. Cohen, M. A. C. Hotchkis, R. Siegele, D. Garton, Z. Pastuovic, D. Fink, A. M. Smith, V. Levchenko, M. Reinhard, J. Dodson, L. Edwards, New ANSTO Capabilities for Energy Materials Characterization, IAEA Technical Meeting TM-40585, 24- 28 of January 2011, Argonne National Lab, Illinois, US

David Cohen (invited, fully funded) The IAEA/ RCA Fine and Coarse Particle Ambient Air Database, RCA/ IAEA Final Progress Review Meeting, Vienna, Austria, 14-18 March 2011.

David Cohen (invited, fully funded) Australia Project Report GENT Fine/ Coarse Sampling Summary 2003-2008 RCA/ IAEA Final Progress Review Meeting, Vienna, Austria, 14-18 March 2011.

M.A.C. Hotchkis, D. Child, D. Fink and A. Wallner. Formation of multiply-charged ions with sub-equilibrium gas stripper thickness, 12th International Conference on Accelerator Mass Spectrometry, 20-25 March 2011, Wellington, New Zealand.

D. Child and M. Hotchkis. Plutonium and uranium contamination in soils from the former nuclear weapon tests in Australia, 12th International Conference on Accelerator Mass Spectrometry, 20-25 March 2011, Wellington, New Zealand.

E. Chamizo, M. García-León, R. García-Tenorio, M. Hotchkis. Measurement of Pu and U isotopes on the 1 MV AMS system at the Centro Nacional de Aceleradores, 12th International Conference on Accelerator Mass Spectrometry, 20-25 March 2011, Wellington, New Zealand.

A. Wallner, K Buczak, A. Plompen, D. Schumann, V. Semkova. New exotic and non-standard radionuclides in AMS, 12th International Conference on Accelerator Mass Spectrometry, 20-25 March 2011, Wellington, New Zealand.

A. Wallner, T Belgya, M. Bichler, K Buczak, I Dillmann, F Kappeler, A Mengoni, F Quinto, P Steier, L Szentmiklosi. A novel approach for neutron-capture studies of ²³⁵-U and ²³⁸-U, 12th International Conference on Accelerator Mass Spectrometry, 20-25 March 2011, Wellington, New Zealand.

David D Cohen, Jagoda Crawford, Eduard Stelcer, Armand Atanacio. A new approach to the combination of IBA techniques and back trajectory data to study long range transport of air pollution. 20th International Conference on Ion Beam Analysis, Itapema, Brazil, 10-15 April 2011.

M. Ionescu, B. Winton, D. Wexler, R. Siegele, A. Deslantes, E. Stelcer, A. Atanacio, D. D. Cohen, Enhanced biocompatibility of PDMS (polydimethylsiloxane) polymer films by ion irradiation, IBA 2011, 11-15 April 2011, Itapema, Brazil

M. Minakshi, P. Singh, D. Martin, D. Appadoo, M. Blackford, and M. Ionescu, LiNiPO₄ Aqueous Rechargeable Battery, 219th International ECS Meeting, 1-6 May 2011, Montreal, Canada

David Cohen (invited), Fine particle characterisation and sources in Australia, NSW Office of Environment & Heritage Workshop on Fine Particles, Masonic Centre, Sydney, NSW, Australia, 17 May 2011.

G. Jacobsen, F. Bertuch, K. Sowada, T. Palmer and A. Jenkinson. Radiocarbon dating of linen from an Egyptian mummy. 12th International Conference on Accelerator Mass Spectrometry, 20-25 March 2011, Wellington, New Zealand.

D. Child and K. Simon. A new method for separation and purification of beryllium and aluminium using the Eichrom DIPEX[®] resin. 12th International Conference on Accelerator Mass Spectrometry, 20-25 March 2011, Wellington, New Zealand.

Reports

David Cohen, The IAEA/ RCA Fine and Coarse Particle Ambient Air Database, Report to the IAEA Technical Cooperation Dept, Vienna, Austria, pp1-31, 30 November 2010.

David Cohen, Jagoda Crawford, Rainer Siegele, Description of ANSTO's Confocal Microprobe Simulation Program, ANSTO External Report E-722, February 2011.

Patents