

16th Australian Conference on

Nuclear and Complementary Techniques of Analysis

25.-27. November 2009

Program

Wednesday 25th November 2009

- 08:30 - 09:30 Registration
- 09:30 - 09:50 Conference Opening**
- Session 1 Environment & Bioscience I**
Chair: Rainer Siegele
- 10:00 - 10:30 *Invited* Andy Pitman
Recent developments in climate science and climate projections
David Cohen
- 10:30 - 10:50 IBA Techniques for Fine Particle Pollution, Source Characterisation and Quantification of Long Range Transboundary Smoke and Soil Events in the Asian Region
Andrew McCallum
- 10:50 - 11:10 Radioisotope Investigations of the Impact of Groundwater Abstraction on Surface Water Groundwater Interactions
- 11:10 - 11:40 Morning Tea
- Session 2 Nanostructure**
Chair: Andreas Markwitz
- 11:40 - 12:00 Andrew Alves
Ion transmission through FIB milled nm-scale apertures for use in single donor implants
- 12:00 - 12:20 Johannes Kaiser
The effects of low-energy Fe⁺ implantation and electron beam annealing on self-assembled silicon nanostructures
- 12:20 - 12:40 Anwaar Malik
Ion beam synthesis of metallic nanoparticles in SiO₂ thin films
- 12:40 - 14:20 Lunch
- Session 3 Instruments & Detectors**
Chair: Chris Ryan
- 14:20 - 14:50 Mike Hotchkis
A bright future for Accelerator Science at ANSTO
- 14:50 - 15:10 Steve Tims
A time-of-flight system with a 6m flight path for Uranium-236 AMS
- 15:10 - 15:30 Amy Ziebell
2nd Generation Microdosimeter with Guard Ring: An IBIC Study
- 15:30 - 15:50 Jessica van Donkelaar
Nanoscale Confinement and Detection of Single Ion Implants

15:50 - 16:10	Toshi Fujioka A new cosmogenic isotope, manganese-53, for exposure dating: preliminary results from iron-rich rocks
16:10 - 16:30	Afternoon Tea
16:30 - 18:30	Poster Session 1
18:30 - 20:00	BBQ Dinner

Thursday 26th November 2009

Session 4

Complementary Techniques

Chair: David Cohen

09:00 - 09:30	<i>Invited</i> Ian R. Gentle Science at the Australian Synchrotron
09:30 - 09:50	Chris Ryan The Maia Advanced Detector Array and Trace Element Imaging Techniques and their Application
09:50 - 10:10	Khay Fong Photoresponsive Additives in Lyotropic Liquid Crystals
10:10 - 10:30	Ashley Cullen Dosimetry of Intense, Pulsed Synchrotron X-ray Microbeams
10:30 - 11:00	Coffee

Session 5

Materials I

Chair: Jeff McCallum

11:00 - 11:20	Elliman/D.K. Venkatachalam The growth of self-assembled Au nanostructures during the epitaxial crystallisation of Au-implanted amorphous silicon layers
11:20 - 11:40	Toby Hopf Fabrication of ordered silicon nanowhisker arrays by nanosphere lithography
11:40 - 12:00	Matt Carroll The Effects of Nanoparticle Polymer Stabilisers on the Contrast of Magnetic Resonance Images
12:00 - 12:20	Magdalena Wajrak Investigation of the surface of solid gold electrode subjected to electrochemical processes using SIMS, SEM and Synchrotron
12:20 - 12:40	Jack Burgess Impurity Related Optical Luminescent Centres in Ion-implanted Silicon
12:40 - 14:00	Lunch

Session 6**Materials II****Chair: R. Elliman**

14:00 - 14:20

Virginia Drumm

Surface Analysis of "Ion Cut" Diamond Thin Films

14:20 - 14:40

Daniel Pyke

Hydrogen blister depth and surface roughness during ion-cut process

14:40 - 15:00

Kumar Ganesan

A Diamond Detector for Single Ion Implantation

15:00 - 15:20

Karl Whittle

In Situ Radiation Damage Studies of $\text{Ca}_3\text{Zr}_2\text{FeAlSiO}_{12}$ and $\text{Ca}_3\text{Hf}_2\text{FeAlSiO}_{12}$

15:20 - 15:50

Coffee

15:50 - 17:50

Poster Session 2

18:30 - 23:00

Conference Dinner at Panorama House

Friday 27th November 2009**Session 7****Environment & Bioscience II****Chair: Tezer Esat**

09:00 - 09:20

Andrew Smith

Cosmogenic radionuclides - production, measurement & applications

09:20 - 09:40

Mark Hackett

Hypoxia and Cerebral Malaria Pathogenesis: New Investigations Using Vibrational Spectroscopy

09:40 - 10:00

Richard Collins

The use of ^{26}Al Accelerator Mass Spectrometry to investigate aluminium chemistry in coastal lowland acid sulfate soils

10:00 - 10:20

Robert Piccinin

Localization and Uptake of Gold by *Brassica juncea*

10:20 - 10:40

Lance Karlson

Application of Ion Beam Analysis and Refined Sample Preparation Techniques to the Study of Aeolian Dust Samples from Northwest Australia

10:40 - 11:10

Coffee

Session 8**Accelerator Techniques****Chair: Mike Hotchkis**

11:10 - 11:30

Tezer Esat

Charge Collection Thermal-Ion Mass Spectrometry

11:30 - 11:50	Dale Prokopovich Heavy Ion Microprobe Analysis of the TIMEPIX detector
11:50 - 12:10	Pat Photongkam Room temperature ferromagnetism in as implanted Eu-ZnO thin films
12:10 - 12:30	Jake Warner Ion Implantation of Radioisotopes for Tracing Prosthetic Wear
12:30 - 12:50	Keith Fifield The Single Stage AMS for radiocarbon dating at ANU
12:50 - 14:30	Lunch
Session 9	Conference Closing
14:30 - 15:00	Prizes and concluding remarks
15:15	Conference close
15:15 - 16:30	<i>Tour of Accelerators</i> Participants that are interested, please register

List of Posters

Mohammed Ahsan

Microstructural characterization of electron beam evaporated tungsten oxide films for gas sensing applications

Hatem Alamri

Physical and Mechanical Characteristics of Nano-Clay Cellulose Fibre-Reinforced Epoxy Nanocomposites

Abdullah Alhuthali

Physical and Mechanical Properties of Natural Fibre Reinforced Vinyl-Ester Nanocomposites

Mohammad Hussein Assadi

The mechanism of room temperature ferromagnetism in Eu-ZnO system

Jaroslav Blazek

Investigation of digestion kinetics in commercial starches using in-situ small-angle neutron scattering

Daniel Boland

Investigating the fate of U(VI) during the Fe(II)-catalysed transformation of Fe(III) minerals with X-ray absorption spectroscopy

David Button

Methods for Eliminating Interferences and Background Reduction in Mass Spectrometry based on an ECR Ion Source

Malcolm Clark

The reversibility of U and Th binding on a Modified Bauxite Refinery Residue

Richard Clements

Neodymium zirconate - Theoretical crystal structure, electronic density of states and preliminary XPS analysis.

David Cohen

The Australian National Tandem for Applied Research - ANTARES, its 20 Years Old.

Laurence Deam

Dynamics of defect evolution in phosphorus-implanted structures for Quantum Computer Development

Jessica van Donkelaar

MeV IBIC analysis applied to silicon keV particle detectors

Rob Elliman

The use of ion-implantation in non-volatile memory (NVM) applications

David Fernandez

Neutron Reflectometry studies of antimicrobial peptides in supported lipid bilayers

Renee Goreham

A novel method for generation of surface gradients of nanoparticles

Ian Graham

Sapphire and ruby trace element geochemistry: PIXE versus other analytical techniques

Rosalind Gummow

Morphology and preferred orientation of pulse electro deposited magnesium

Mike Hotchkis

Formation of multiply-charged ions in Tandem accelerators with sub-equilibrium stripper thickness

Jamie Howarth

Towards an approach for removing reworked pollen from pollen concentrated for AMS dating of lake sediments.

Brett Johnson

Deep level transient spectroscopy study of Fe-implanted pyrite

Brett Johnson

RBS study of the effect of dopants on Cu diffusion in amorphous silicon

M.Bobby Kannan

In vitro degradation mechanism(s) of magnesium-based biomaterial

John Kennedy

Migration of implanted Fe in silicon dioxide during electron beam annealing

T.-H. Kim

The fabrication of optically active silica nanowires by ion-implantation

Jamie Laird

Modification of Pyrite Bulk Resistivity and Surface Reactivity Using Ion Implantation

Jamie Laird

Time-Resolved Ion Beam Induced Current Analysis of Geological Minerals

Jamie Laird

Time-Resolved Radiation Effects Microscopy using Focused Ultrafast Lasers and MeV Heavy Ions for Qualifying Space Based Electronics

Rajeev Lal

Trace Element Concentrations In Sediments From Kadavu Passage, Fiji

Jim Lee

Cold plasma in solution: a novel method to prepare ZnO nanoparticles

Crystal Maher

Theoretical Modeling of Modified Bauxite Refinery Residues as a Shield for Radioactive Materials

Peter Murmu

Effect of Annealing on the Compositional and Structural Properties of Rare Earth Implanted ZnO Thin Films

Pandiyan Murugaraj

On the High Electromechanical Sensitivity in Ion Beam Irradiated Polymer Thin Films

Rashmi Nigam

Neutron Diffraction study of superconducting ferromagnet $\text{Ru}_{0.9}\text{YSr}_2\text{Cu}_{2.1}\text{O}_{7.9}$

Geoffrey Pang

Transmission Electron Microscopy (TEM) Characterisation of thermally Grown RuO_2 thin films

Wei Kong Pang

Thermal Decomposition of Ti_3SiC_2 and $\text{Ti}_3\text{Si}_{0.95}\text{Al}_{0.05}\text{C}_2$ in Vacuum: A Comparative Study using in-situ Neutron Diffraction

Zihan Poh

Synthesis, nanostructures, crystallization, wetting behavior and photocatalytic properties of titania nanotube arrays fabricated by Ti anodization

Zihan Poh

Plasma polymerization for generation of laterally controlled chemical gradients on nanoporous membrane surface

John Prescott

Three-dimensional luminescence spectra of single grains of feldspar

Majed Radhi

Size-Resolved Mass and Chemistry of Australian Desert Aerosol

Rangam Rajkhowa

Studying Heavy and Transition Metal Ion Binding Behaviour of Silk Using Radioisotopes

Sergey Rubanov

TEM Study of the Damage in the Single Crystal Diamond after FIB Milling

Mitra Safavi-Naeini

TCAD and IBIC charge collection modeling of a novel silicon detector for use in medical imaging

M.N. Saleh

The effect of ion-implantation on the resistive switching response of NiO thin films

Rainer Siegele

Improved Resolution on the ANSTO Microprobe and its application

Raman Singh

Secondary Ion Mass Spectrometry for Establishing Role of Nanocrystalline Structure in Extraordinary Oxidation Resistance of Fe-Cr Alloys

Paul Spizzirri

Phosphorus Donor Nano-Arrays Created in Silicon using Low Energy, Ion Implantation through Nano-Transmission Masks

Ed Stelcer

Ion Beam Analysis of 3 DRUM Aerosol Sampler Strips

Alex St John

Investigation into the species and structures within Polymer Inclusion Membranes

Heiko Timmers

Using ^{137}Cs and $^{239+240}\text{Pu}$ measurements to investigate recent floodplain deposition in a low-latitude semi-arid catchment

Heiko Timmers

$^{100}\text{Pd/Rh}$ perturbed angular correlation measurements in GaN/ZnO
- a step towards spintronics?

Heiko Timmers

Time-differential perturbed angular correlation spectroscopy of $^{100}\text{Pd/Rh}$ in zinc towards the commissioning of two new Australian instruments

Gordon Troup

Ales, Wines, Whiskies, Brandies and Green Ginger Wine: a Radical use of EPR

Gordon Troup

From Radiation Damage, through Minerals and Gemstones, to Art, with EPR

Michael Went/Maarten Vos

Rutherford backscattering and channeling effects in high-energy electron spectroscopy

Liam Ward

Studies on the Wear and Corrosion Behaviour of a Selection of MEVVA Ion Implanted Stainless Steels

Michael Went

The Australian Positron Beam-line for Positron Annihilation Lifetime Spectroscopy Studies

Karl Whittle

Neutron and Resonant X-ray Diffraction Studies of Zirconolite 2M

Karl Whittle

Radiation Damage and the Effects of Disorder

Brad Winton

Buckling and delamination buckling induced patterns in thin confined elastic films by ion implantation

Stephan Winkler

A Gas-filled Magnetic Analyzer for Accelerator Mass Spectrometry of Isotopes in the 25-60 amu mass range

Changyi Yang

Single Ion Implantation technology for the construction of nano-electronic devices

Yang Yu

Diatomaceous Earth (DE): a route for large scale preparation of advanced nanoscale materials with unique 3-D morphologies

Wei ZHOU

Stalagmite Records of Monsoon Evolution in Central China

Andreas Markwitz

Electron beam annealing of (100) Si following dual ion implantation of Pb/N

Jayde Livingstone

Glow curve characteristics of LiF:Mg,Ti (TLD-100) following irradiation by heavy charged particles: High temperature thermoluminescence and the peak 5a/5 nanodosimeter