

## Program at a Glance

SATURDAY – 03 JULY	
14:00–17:00	IFES International Steering Committee Meeting

SUNDAY – 04 JULY	
	<b>Sunday School</b> Held at the Australian Centre for Microscopy & Microanalysis (ACMM) at the University of Sydney. For details see the <a href="#">Workshop &amp; Related Events page on the IFES website</a> .
9:00	Pick up from Coogee Crown Plaza Hotel to the University of Sydney (Madsen Building)
9:30	Workshop Registration and Morning Tea
9:50	<b>High-Field Nanoscience (Richard Forbes)</b> <ul style="list-style-type: none"> <li>• Scope of high (electric) field nanoscience (HFNS)</li> <li>• HFNS as "integrating science, particularly integrating theory"</li> <li>• Field electron and ion emission sources, processes and devices</li> <li>• Related machines and techniques</li> </ul>
10:50	Morning Tea
11:10	<b>High-Field Nanoscience (Hans Juergen Kreuzer)</b> <ul style="list-style-type: none"> <li>• Modification of metal surfaces and clusters by high fields</li> <li>• Field-induced chemistry</li> <li>• Polymers in high electric fields</li> <li>• Field-induced desorption kinetics</li> </ul>
12:10	Lunch
13:10	<b>Atom Probe Tomography (Mike Miller)</b> <ul style="list-style-type: none"> <li>• Background (historical evolution of atom probe)</li> <li>• Basic theory / operation of atom probe (voltage and laser)</li> <li>• Specimen preparation techniques</li> <li>• Materials applications</li> </ul>
14:10	Afternoon Tea
14:30	<b>Atom Probe Tomography (Stephan Gerstl)</b> <ul style="list-style-type: none"> <li>• Instrumentation and software</li> <li>• Reconstruction</li> <li>• Data analyses</li> <li>• Case study of advanced materials</li> </ul>
15:30	ACMM Lab Tour
16:00	Transport to Coogee Crowne Plaza Hotel

DAY 1 – MONDAY, 05 JULY		
8:30	Opening ceremony	
	<b>Plenary Session</b>	<b>Session Room: Oceanic East</b>
9:00	Ion Beam Microscopy – 21st Century Imaging <i>David Joy</i>	
9:50	What we expect from materials characterisation in CSIRO to advance the Australian Science Agenda <i>Cathy Foley</i>	
10:40	Morning Tea	
	<b>Frontier Materials Session Room: Oceanic East</b>	<b>Surface Chemistry and High-Electric Fields Session Room: Oceanic West</b>
11:00	Invited: Evaluation of various organic materials for atom probe analysis: specimen manufacture and analysis assessment <i>Ty Prosa</i>	Nanoclocks in the catalytic formation of water on Rhodium: a theoretical perspective <i>Jean-Sabin McEwen</i>
11:25	Scanning atom probe study of biomolecules <i>Osamu Nishikawa</i>	FIM studies of the near-equilibrium shape of clean and oxygen preadsorbed metal nano-crystals <i>Robert Bryl</i>
11:40	Atom probe study on the bulk SmCo/Fe nanocomposite permanent magnets produced by ball-milling and warm compaction <i>Xiangyuan Xiong</i>	The NO <sub>2</sub> /H <sub>2</sub> reaction over platinum in high electric fields <i>Jean-Sabin McEwen</i>
11:55	Chemical-partitioning in (Co <sub>1-x</sub> Ni <sub>x</sub> ) <sub>88</sub> Zr <sub>7</sub> B <sub>4</sub> Cu <sub>1</sub> soft magnetic nanocrystalline alloys <i>Chad Hornbuckle</i>	Intermixing and surface alloying in Hf and Zr ad-layers on W(100) <i>Antoni Ciszewski</i>
12:10	Laser atom probe analysis of hydrogenation-diproportionation-desorption-recombined Nd-Fe-B powder <i>Tadakatsu Ohkubo</i>	Field Emission Imaging of a Ni crystal during Carbon Nanotube Growth <i>Norbert Kruse</i>
12:25	Characterization, metrology and properties of semiconductor nanowires- and nanoclusters-based nanostructures <i>Philippe Pareige</i>	Field Emission from graphene nano-sheet prepared by chemical reduction of exfoliated graphite oxide: the C-O content effect <i>Juncong She</i>
12:40	Lunch	
	<b>Müller Outstanding Young Scientist Award Session Chair: Krystyna Stiller</b>	<b>Session Room: Oceanic East</b>
13:40	Investigation of the analysis parameters and background subtraction for high-k materials with Atom Probe Tomography <i>Sergej Mutas</i>	
14:00	Shaping the lens of the atom probe: fabrication of site specific, oriented specimens and application to grain boundary analysis <i>Peter Felfer</i>	
14:20	Field evaporation behavior in [001] FePt thin films <i>Karen Torres</i>	
14:40	Atom-probe for FinFET dopant characterization <i>A.K. Kambham</i>	
15:00	Ultra-high resolution imaging via SPM-induced electron excitations <i>Taryl Kirk</i>	
15:20	Afternoon Tea	
15:40	Time evolution of morphology in mechanically alloyed Fe-Cu <i>Catharina Wille</i>	
16:00	Microstructural investigations of Sr-modified Al-15Si alloys in the range from atomic to micrometer	

	scale <i>Melanie Timpel</i>
16:20	Specifics of cross-section analyses on semiconductor multi-layers <i>Sebastian Koelling</i>
16:40	Impurity atom redistribution in a nanocrystalline Ni-Fe alloy induced by high-pressure torsion <i>Song Ni</i>
17:00	Radiation-induced segregation in classical and nanocrystalline austenitic stainless steels <i>Auriane Etienne</i>
17:20	Triple line transport and its impact on the thermal stability of nanocrystalline Fe/Cr multilayer <i>Patrick Stender</i>
17:40	Steering Committee Nomination Session
18:00	CAMECA's Update and Welcome Drink - All IFES attendees are cordially invited
17:30	Day 1 Closes

## DAY 2 – TUESDAY, 06 JULY

	Plenary Session	Session Room: Oceanic East	
9:00	Physics and chemistry under large external forces: Making and breaking bonds for nanotechnology <i>Hans Juergen Kreuzer</i>		
9:50	(IFES J.H. Block Memorial Lecture), NO-H <sub>2</sub> reaction over Pd and Pt crystallites : studies by field ion microscopy and one-dimensional atom-probe <i>Thierry Visart de Bocarmé</i>		
10:40	Morning Tea		
	<b>Pulsed-Laser Atom Probe Workshop</b> Session Room: Oceanic East	<b>Workshop on Theory in Field-Emission / Scanning Microscopes</b> Session Room: Oceanic West	
11:00	Invited: The physics of laser-produced plasmas <i>Barry Luther-Davies</i>	11:00	Theoretical study of field electron emission from graphite sheets <i>Zhibing Li</i>
11:25	Invited: The pulsed laser assisted atom probe: Müller, Maxwell and Fourier in a closed meeting <i>Francois Vurpillot</i>	11:15	Use, in Fowler-Nordheim-type equations, of the exact solution of the Schroedinger equation for the Schottky-Nordheim barrier <i>Richard Forbes</i>
		11:30	Influence of improved surface potential-energy model on CFE characteristics and related slope and intercept correction factors <i>Andreas Fischer</i>
11:50	Optimized thermal pulsing for atom probe tomography <i>Thomas Kelly</i>	Field electron emission from triple and quadruple junctions <i>Moon Chung</i>	
12:05	Atom Probe tomographic analysis of MOSFET device <i>Bong Ho Lee</i>	Theory of laser assisted field evaporation from oxides <i>Masaru Tsukada</i>	
12:20	Surface carrier recombination time on a semiconductor tip under ultrafast laser pulses <i>Bernard Deconihout</i>	Prediction of probe radius for scanning ion microscopes (alternatively called "picoprobers") <i>Richard Forbes</i>	
12:40	Lunch		
	Business Meeting		
13:40	Laser-pulsed atom probe study of a complex maraging steel: laser pulse energy variation and precipitate analysis	Open Discussion	

	<i>Olga Dmitrieva</i>	
13:55	Effects of laser pulsing on analysis of steels by atom probe tomography <i>Fang Liu</i>	
14:10	Open Discussion	
15:10	Afternoon Tea	
	<b>Advanced Alloys Workshop Session Room: Oceanic East</b>	<b>Laser Pulsing for Non-metallic Materials Workshop Session Room: Oceanic West</b>
15:30	Invited: Future nuclear fission and fusion materials: What can atomic scale analysis teach us? <i>Emmanuelle Marquis</i>	Invited: Expanding the applications of the atom probe technique by ultraviolet femtosecond laser <i>Kazuhiro Hono</i>
15:55	Atom probe characterisation of solute segregation at grain boundaries of an ultrafine-grained Al-Zn-Mg-Cu alloy <i>Gang Sha</i>	3D Atom Probe Analysis of Embedded Nanoclusters in Oxide Matrix <i>Satyanarayana Kuchibhatla</i>
16:10	Characterization of nanoscale precipitates in Ni-rich NiTiX (X=Pd, Hf) high temperature shape Memory alloys <i>Taisuke Sasaki</i>	Atomic scale investigation of oxides using laser assisted atom probe tomography <i>Baishakhi Mazumder</i>
16:25	Atom Probe Characterization of precipitation in an aged Cu-Ni-P alloy <i>Yasuhiro Aruga</i>	Atom probe investigation on the Co doped ZnO thin films <i>Li Li</i>
16:40	Role of Sn Additions in the Pre-precipitation Stage of Al-Cu Alloys <i>Michael Moody</i>	Quantitative atom probe analysis of carbides <i>Mattias Thuvander</i>
16:55	Quantitative atom probe analyses of magnesium alloys <i>Keiichiro Oh-Ishi</i>	Laser assisted field evaporation of oxides with different band gaps <i>Yimeng Chen</i>
17:10	Atom probe tomography of clustering in Al-Mg-Si alloy: density spectrum analysis <i>Nelia Wanderka</i>	On Chemical Composition of Iron Oxides with Laser Atom Probe Tomography <i>Mukesh Bachhav</i>
17:25	Open Discussion	Open Discussion
18:00	Poster Session and Refreshments	
20:00	Day 2 Closes	

### DAY 3 – WEDNESDAY, 07 JULY

	<b>Plenary Session</b>	<b>Session Room: Oceanic East</b>
9:00	Molecular beam epitaxy growth and novel properties of topological insulator films of Bi <sub>2</sub> Te <sub>3</sub> and Bi <sub>2</sub> Se <sub>3</sub> <i>Qi-Kun Xue</i>	
9:50	Dynamic and field-induced processes observed by scanning tunnelling microscopes <i>Werner Hofer</i>	
10:40	Morning Tea	
	<b>Instrumentation and Reconstruction Workshop Session Room: Oceanic East</b>	<b>Materials and Field-Electron/Ion Emission Workshop Session Room: Oceanic West</b>
11:00	Invited: Advances of tomographic reconstruction in atom probe microscopy <i>Baptiste Gault</i>	Invited: Diffraction imaging with electrons from an ultracold plasma source <i>Robert Scholten</i>
11:25	Trouble at the tip surface: simulation of the	Photo - Enhanced Field Emission Study of TiO <sub>2</sub>

	measurement of heterogeneous metallic/dielectric sample structures <i>Christian Oberdorfer</i>	Nanotubes Array <i>Padmakar Chavan</i>
11:40	Effect of Analysis Direction on the Measurement of Interfacial Mixing in Thin Metal Layers <i>David Larson</i>	TOF mass spectrometry exploitation characterization of polymer-MWCNT emitters <i>Eugeni Popov</i>
11:55	Three-dimensional Hough Transformation on Atom Probe Data Cloud <i>Lan Yao</i>	Fabrication of intrinsic carbon nanotube field emission arrays <i>Graham Sanborn</i>
12:10	New concept of APT mass analyser <i>Ludovic Renaud</i>	High current liquid metal ion source using porous tungsten multiemitters <i>Martin Tajmar</i>
12:25	An approach to atom probe reconstruction by studying the field-evaporation induced evolution of 3D tip morphology <i>Tim Petersen</i>	Open Discussion:
12:40	Kinetic energy discrimination for atom probe tomography <i>Thomas Kelly</i>	
12:55	Lunch	
13:55	Open Discussion	
14:40	Special IFES Forum: The ATOM Project	
15:30	Conference Photograph	
15:50	Break	
16:45	<b>Sydney Harbour Cruise</b> Delegates assemble for 5 pm transport to harbour Boat departing 6 pm Cruise includes IFES Dinner, EW Müller prize and poster prize awards	
21:00	Day 3 Closes	

#### DAY 4 – THURSDAY, 08 JULY

	Plenary Session	Session Room: Oceanic East
9:00	Nano-particles and filaments in steels: from understanding to materials design <i>Dirk Ponge</i>	
	<b>Data Analysis Workshop</b> <b>Session Room: Oceanic East</b>	<b>Electron-Emission Processes and Microscopy Workshop</b> <b>Session Room: Oceanic West</b>
9:50	Quantifying atom probe resolution <i>Krishna Rajan</i>	Invited: Seeing into materials with aberration-corrected scanning transmission electron microscopy <i>Stephen Pennycook</i>
10:15	On the Analysis of Solute Clustering using Atom-Probe <i>Leigh Stephenson</i>	Measurement of z-direction component of electron spins field-emitted from a single-crystal magnetite whisker <i>Shigekazu Nagai</i>
10:30	Determination of site occupation and A-B binding parameters in intermetallic alloys <i>Torben Boll</i>	A possibility of spin polarized electron beam from carbon nanotubes field emission <i>Shi-Dong Liang</i>
10:45	Morning Tea	
11:05	Atom probe study of an Al-Cu alloy containing clusters and a bimodal precipitate size distribution: quantitative characterisation across	LL-BSE electrons and their contrast in FE-SEM <i>Heiner Jaksch</i>

	multiple length scales <i>Ross Marceau</i>	
11:20	Modelling of laser assisted field evaporation <i>Maria Gruber</i>	Open Discussion
11:35	The missing pieces: Short-Range Order in Monte Carlo simulations for Atom Probe Tomography. <i>Anna Ceguerra</i>	
11:50	Open Discussion	
12:40	Lunch	
	<b>Steels Workshop Session Room: Oceanic East</b>	<b>Thin-Films and Semiconductors Workshop Session Room: Oceanic West</b>
13:40	Invited: Chemistry of interfaces studied with nanometer resolution <i>Krystyna Stiller</i>	Invited: Site occupancies in ordered inter-metallic phases as studied by Atom Probe Tomography <i>Tala'at Al-Kassab</i>
14:05	The role of alloying elements in nanostructured ferritic steels <i>Mike Miller</i>	Three-dimensional compositional & structural characterization of semiconducting materials with sub-nm resolution <i>Ahmed Shariq</i>
14:20	A Comparison of the structure of solute clusters formed during thermal ageing and irradiation <i>Jonathan Hyde</i>	Laser assisted atom probe analysis of thin film on insulating substrate <i>Masaya Kodzuka</i>
14:35	Atom-probe tomography studies of environmental degradation in nuclear reactor materials <i>David Saxey</i>	Impurities controlling deformation in nanocrystalline Al <i>Julie Cairney</i>
14:50	Accuracy of precipitate analysis in the Fe-Cu system <i>Harald Leitner</i>	Inhomogeneity of Indium composition observed in InGaN/GaN active region of LED by APT and STEM-HAADF <i>Gil Ho Gu</i>
15:05	Afternoon Tea	
15:25	Atom probe tomography investigation of heterogeneous precipitation in steels <i>Frederic Danoix</i>	Atomic-scale distribution of Na and O in CuInSe <sub>2</sub> thin-film solar cells studied by atom probe tomography <i>Oana Cojocaru-Miredin</i>
15:40	The first direct observation of hydrogen trapping sites in nano-sized carbide precipitates dispersion steels by atom probe tomography <i>Jun Takahashi</i>	Using atom probe tomography to analyse MAX-phase materials <i>Marie Sonestedt</i>
15:55	The Ageing Behavior of Nb/V-bearing CASTRIP Steels at 525°C <i>Chen Zhu</i>	Oxygen cluster-ion detection in laser-assisted three-dimensional atom probe analysis of <sup>18</sup> O-enriched oxide thin film <i>Teruyuki Kinno</i>
16:10	3D atom probe tomography study of cementite decomposition in cold drawn pearlitic steel wire <i>Yujiao Li</i>	Spinodal decomposition of (Ti,Al)N thin films studied by atom probe tomography <i>Lars Johnson</i>
16:25	Open Discussion	Open Discussion
16:45	Closing Ceremony	
17:00	Day 4 Closes	