

# GEM XVI CONFERENCE PROGRAM

\* Denotes eligibility for student presentation prize

*Sunday 31<sup>st</sup> January 2010*

**17:00 – 20:00**                      **Registration**

**from 18:00**                        **Welcome Reception**

*Monday 1<sup>st</sup> February 2010*

**7:00 - 8:15**                      **Breakfast**

**8:25 – 8:30**                      **Conference Opening**

**8:30 - 10:25**                    **Session 1            Chair: Kostya Ostrikov, CSIRO**

8:30 - 8:50                      M. A. Lieberman; University of California, Berkeley  
*Double layer formation in a two-region electronegative plasma*

8:50 - 9:05                      A. E. Rider\*; University of Sydney / CSIRO  
*Plasma-assisted synthesis of compositionally controlled binary quantum dots*

9:05 - 9:20                      J. R. Machacek\*; University of Nebraska-Lincoln  
*Production of excited atomic hydrogen and deuterium from H<sub>2</sub>, D<sub>2</sub> and HD photodissociation*

9:20 - 9:40                      R. Boswell; Australian National University  
*Research in the Space Plasma Power and Propulsion Group*

9:40 – 9:55                      H.-P. Schmidt; HAW Amberg–Weiden, University of Applied Sciences Amberg

*Arc modelling in low voltage switch gear design*

9:55 - 10:10                    C. Corr; Australian National University  
*Inductively coupled oxygen discharges and the E to H transition*

10:10 - 10:25                    T.P.T. Do\*; Flinders University  
*Low energy electron impact excitation of the <sup>3</sup>B<sub>1u</sub> electronic state of ethylene*

**10:25 - 11:00**                    **Morning Tea**

**11:00 - 12:40**                    **Session 2            Chair: Neil Cramer, University of Sydney**

11:00 - 11:20                    I. Boyd; Monash University  
*UV excimer lamp processing of thin films*

11:20 - 11:35                    D. Pretty; Australian National University  
*Initial results from data mining of MHD fluctuations in stellarators*

11:35 - 11:50                    R. Kompaneets; University of Sydney  
*Effect of a mobility-limited ion flow on ion plasma waves*

11:50 - 12:10                    U. Cvelbar; Jozef Stefan Institute  
*Direct plasma synthesis of nanowires*

12:10 - 12:25                    E. Tam\*; University of Sydney / CSIRO  
*Modelling low temperature, non-equilibrium plasmas for the growth of SWCNTs*

12:25 - 12:40                    T. Lafleur\*; Australian National University  
*Control of helicon wave propagation in low magnetic field expanding plasmas*

<b>12:40 - 14:30</b>	<b>Lunch</b>
<b>14:30 - 16:25</b>	<b>Session 3      Chair: Michael Brunger, Flinders University</b>
14:30 - 14:50	H. Tanaka; Sophia University <i>Substitution effects in electron and CH<sub>3</sub>X (X=F, Cl, Br, I) collisions</i>
14:50 - 15:05	B. Schmerl*; Flinders University <i>Elastic electron scattering cross sections for collisions with CF<sub>3</sub>I</i>
15:05 - 15:20	L. Couédel; Max-Planck-Institut für extraterrestrische Physik <i>Out-of-plane modes in 2D complex plasma crystals</i>
15:20 - 15:40	R. Carman; Macquarie University <i>Development of remote plasma sources for gallium nitride film growth with real-time monitoring of activated nitrogen species</i>
15:40 - 15:55	C. Lei*; National University of Defense Technology <i>Investigation of high-power thyristor switches employed in pulsed power system</i>
15:55 - 16:10	G. von Nessi; Australian National University <i>Analysis of MAST plasma discharges via Bayesian inference</i>
16:10 - 16:25	H. Kato; Sophia University <i>Negative ion formation from XH<sub>4</sub> (X=C, Si, and Ge) molecules by low energy electron impact</i>
<b>16:25 - 17:00</b>	<b>Afternoon Tea</b>
<b>17:00 - 18:10</b>	<b>Session 4      Chair: Sunil Kumar, University of South Australia</b>
17:00 - 17:20	M. Benilov; Universidade da Madeira <i>Cathode spots in DC arc and glow discharges: self-organization phenomena</i>
17:20 - 17:35	A. Samarian; University of Sydney <i>Deposition of Coulomb clusters: control and stability</i>
17:35 - 17:55	J. Howard; Australian National University <i>Plasma Doppler imaging in the DIII-D tokamak</i>
17:55 - 18:10	J. Ling*; Australian National University <i>A low-magnetic field high-density mode in the helicon double layer thruster</i>
<b>19:30</b>	<b>BBQ Dinner</b>

*Tuesday 2<sup>nd</sup> February 2010*

- 7:00 - 8:15**                      **Breakfast**
- 8:30 - 10:25**                    **Session 5 Chair: Steve Buckman, Australian National University**
- 8:30 - 8:50                      K. Bartschat; Drake University  
*Benchmark calculations of atomic data for plasma applications*
- 8:50 - 9:05                      Z. J. Han; CSIRO  
*Superhydrophobic Carbon Nanotube Nanocomposites by Plasma Processing*
- 9:05 - 9:20                      D. H. Seo\*; University of Sydney / CSIRO  
*The effect of Si charge state and ionic polarizability during the initial stage of growth of Si quantum dots: A plasma-assisted approach*
- 9:20 - 9:40                      S. Kumar; University of South Australia  
*Plasma processing for three dimensional biofunctionalisation of alumina tissue engineering scaffolds*
- 9:40 - 9:55                      C. Makocheke; Australian National University  
*Positron interactions with bio-molecules*
- 9:55 - 10:10                    D. Jacobs\*; University of Sydney  
*Formation of helical structures in the complex plasma*
- 10:10 - 10:25                  D. Slaughter; Australian National University  
*Positron-rare gas collisions*
- 10:25 - 11:00**                    **Morning Tea**
- 11:00 - 12:40**                    **Session 6              Chair: Brian James, University of Sydney**
- 11:00 - 11:20                    I. Levchenko; CSIRO  
*Experimental and computational plasma nanoscience: a combinatorial approach*
- 11:20 - 11:35                    P. Paliawadana\*; Australian National University  
*Electron collisions with pyrimidine*
- 11:35 - 11:50                    M. Delanty\*; Macquarie University / CSIRO  
*Quantum dot arrays for quantum information: how plasma can help with ordering*
- 11:50 - 12:10                    B. Blackwell; Australian National University  
*The Australian National Plasma Fusion Facility: results and upgrade plans*
- 12:10 - 12:25                    J. Read\*; Australian National University  
*Synchronous imaging of magnetohydrodynamic fluctuations in the H-1 heliac*
- 12:25 - 12:40                    D. Leykam\*; Australian National University  
*Wake field of a supersonic test particle in a plasma*
- 12:40 - 14:30**                    **Lunch**
- 13:40 – 14:30**                    Meeting to discuss planning of the Joint International Stellarator/Heliotron Workshop and the Asia-Pacific Plasma Theory Conference in Australia in 2011

<b>14:30 - 16:25</b>	<b>Session 7 Chair: Boyd Blackwell, Australian National University</b>
14:30 - 14:50	K. Vasilev; University of South Australia <i>Tunable surface gradients of chemical ligands, nanoparticles and proteins for biomaterials applications</i>
14:50 - 15:05	J. Bertram*; Australian National University <i>Mode inference using Bayesian methods</i>
15:05 - 15:20	W. Cox *; Australian National University <i>Magnetic steering of the Helicon Double Layer Thruster</i>
15:20 - 15:40	M. Hole; Australian National University <i>Model/data fusion: constraining physics models through Bayesian inversion</i>
15:40 - 15:55	J. Hudspeth*; Australian National University <i>Plasma processing for fuel cell membranes and electrodes</i>
15:55 - 16:10	J. J. Lowke; CSIRO <i>Ions produced by lightning step leaders</i>
16:10 - 16:25	W. Tattersall*; Australian National University <i>Monte-Carlo simulation of positron transport in the ANU beamline trap</i>
<b>16:25 - 17:00</b>	<b>Afternoon Tea</b>
<b>17:00 - 18:10</b>	<b>Session 8 Chair: Rod Boswell, Australian National University</b>
17:00 - 17:20	R. Dewar; Australian National University <i>Modulational instability of ion temperature gradient modes</i>
17:20 - 17:35	S. Haskey*; Australian National University <i>A new toroidal Mirnov Array for the H-INF heliac</i>
17:35 - 17:55	M. Mozetic; Jozef Stefan Institute <i>Modification of bacteria by mild oxygen plasma treatment</i>
17:55 - 18:10	A. Gibson*; Australian National University <i>Describing and controlling chaos in the standard map</i>
<b>18:10</b>	<b>GEM Business Meeting</b>
<b>19:30</b>	<b>Conference Dinner</b>

<b>7:00 - 8:15</b>	<b>Breakfast</b>
<b>8:30 - 10:25</b>	<b>Session 9      Chair: Rob Carman, Macquarie University</b>
8:30 - 8:50	A. B. Murphy; CSIRO <i>A three-dimensional model of metal–inert-gas welding of aluminium</i>
8:50 - 9:05	M. Wolter; University of Kiel <i>Measurement of the energy influx during plasma processes with thermal probes</i>
9:05 - 9:20	R. Abeysuriya*; Australian National University/University of Sydney <i>Plasma MHD simulations of next step fusion experiments</i>
9:20 - 9:40	S. Buckman; Australian National University <i>Differential cross sections for the electron-impact near-threshold electronic excitation of argon</i>
9:40 - 9:55	J. Dedrick*; Australian National University <i>Asymmetric radio frequency barrier discharges in air at atmospheric pressure: A potential aerodynamic flow control device</i>
9:55 - 10:10	M. McGann*; Australian National University <i>A model of a 3-D fusion plasma equilibria fully consistent with the existence of field-line chaos.</i>
10:10 - 10:25	M. Creese*; Australian National University <i>An analysis of 2D MSE imaging</i>
<b>10:25 - 11:00</b>	<b>Morning Tea</b>
<b>11:00 - 12:40</b>	<b>Session 10      Chair: Tony Murphy, CSIRO</b>
11:00 - 11:20	C. Charles; Australian National University <i>Oblique double layers; a comparison between terrestrial and auroral measurements</i>
11:20 - 11:35	B. James; University of Sydney <i>Absorption spectroscopy and hook interferometry</i>
11:35 - 11:50	A. Arulsamy; University of Sydney / CSIRO <i>From gaseous plasmas to condensed matter: The ionization energy approach</i>
11:50 - 12:10	L. Campbell; Flinders University <i>Electron impact excitation in the upper atmosphere of Titan</i>
<b>12:10</b>	<b>Closing Remarks</b>
<b>12:40</b>	<b>Lunch</b>