



National Centre for
Plasma Science & Technology

The Aurora

Vol 2008 / 02

October 2008

CONTENTS

Message from Dr
Jean-Paul
Mosnier,
Chairman,
NCPST
Technical
Committee

2nd NCPST
Postgraduate
Seminar Series

Grant Successes

Radio Frequency
Discharges
Workshop

Biomedical
Applications
Workshop

www.ncpst.ie

Dear Colleagues,

It is with great pleasure that I put pen to paper to write the editorial of the second issue of the NCPST newsletter "The Aurora". Here, I will summarise some NCPST key achievements of the recent past and suggest some important objectives for the near future.

First of all, I would like to thank all the NCPST members, research students, postdocs, faculty and administrative staff for their work, dedication and achievements. Individuals are surely the most important factor to bring success to any organisation. Since I took up the position of NCPST Technical Chair in August 2006, I have had numerous occasions to meet with NCPST colleagues at various fora, seminars or in DCU corridors. Each time, I have been impressed with the quality of their scientific message and their clear vision for the future of the science of electronic plasmas. I firmly believe that it is through the exploitation of the diverse and talented human potential of NCPST that its position as a leading research and educational outfit can be sustained.

The ultimate step in the act of making new science lies in its communication to the outside world: without communication, science does not exist! This may take various forms and use various media. In the following pages of Aurora, you will find examples of notable scientific achievements communicated by NCPST members. One of our objectives in the coming year will be to strengthen NCPST activities as a communicator of plasma science.

Significant examples of the maturity and leadership of NCPST were given as it organised and hosted several large scale events, namely the 34th Institute of Physics IOP Annual Conference on Plasma Physics (2-5 April 07), the One-day Workshop on Plasma Processes for Biomedical Applications (24 May 07) and the International Workshop on RF Discharges (11-13 June 07). These events are essential avenues for NCPST to position its own research against the community's and to define new trends in plasma science through the choice of themes and invited speakers. They also allow to meet with and engage key national/international researchers. These events were highly successful and more detailed accounts of their proceedings can be found at www.ncpst.ie. We endeavour to build upon these successes and will continue to organise and promote high quality workshops and conferences.

Both the accomplishment and the advancement of the research and educational missions of NCPST depend on its success in gaining major research funding. 2007 was rife with new opportunities for large-scale funding: launch of the European Research Council (ERC) grant programmes, launch of the EU Framework 7 Programme (FP7), Cycle 4 of the HEA Programme for Research and Teaching in third level Institutions (PRTL) and the Irish Government Charles Parsons Energy Research Awards constitute but a few examples. We should not forget, of course, the existing programmes of Science Foundation Ireland (SFI), IRCSET and Enterprise Ireland. Although this list appears endless, all the programmes are highly competitive. Examples of NCPST grant successes are provided on the inner pages of Aurora. Congratulations to all! We will promote a clear funding strategy to ensure NCPST is successful in its large-scale grant applications, notably under the various FP7 funding calls for which NCPST has organised detailed information sessions.

*With best wishes,
Dr Jean-Paul Mosnier,
Chair, NCPST Technical Committee*



* Dr Adnan Boudi
* Dr Justina Grabowska
* Dr Ahmed Issa
* Dr Shane Linnane
* Mr Kabir Al Mamun
* Dr Derek Monahan
* Dr Gomathi Natarajan
* Dr Louise Nolan
* Dr Eoin O'Leary
* Dr Ram Prasad Gandhiraman

2ND NCPST POSTGRADUATE SEMINAR SERIES

On Friday, 25th April 2008 the NCPST held its 2nd Postgraduate Research Seminar. This event gives postgraduate research students an opportunity to showcase their work in a short oral presentation. At this year's Seminar the adjudicators were Dr Paul Swift, DCU, School of Physical Sciences and Dr Felipe Soberon, LEXAS Research. The judges were very impressed with all speakers and had much difficulty in choosing the eventual prize winners to the extent that they awarded four prizes rather than the original three!

The speakers were:

Muhammad Iqbal	<i>"Numerical Simulations of an Atmospheric Pressure Discharge using One and Two Dimensional Fluid Model"</i>
Padraigh Hough	<i>"Spatially and Temporally Resolved Electron & Ion Mapping of Colliding Laser Produced Plasmas"</i>
Mairead Hurley	<i>"Cosmic Structures in the Vicinity of Galaxies at Early Times"</i>
Jiang Xi	<i>"Laser-Induced Breakdown Spectroscopy : A Recent Review"</i>
Alan Meaney	<i>"On the Growth and Characterisation of P-Type ZnO"</i>
Gurusharan Singh	<i>"Dispersion Modes of Optical Fibre"</i>
David Kavanagh	<i>"Design of Process Window for Etching of Silicon Features using SF6"</i>

And the prize winners were:

1 st Prize	Alan Meaney (€750)
2 nd Prize	Muhammad Iqbal (€500)
3 rd Prize	Padraigh Hough (€100) and Mairead Hurley (€100)

Winners were presented with their winning cheques and certificates by the Director of the NCPST – Professor Miles Turner.



Winners

Professor Miles Turner, Director, NCPST, Muhammad Iqbal (2nd); Alan Meaney (1st); Mairead Hurley (joint 3rd) and Padraigh Hough (joint 3rd)

OTHER GRANT SUCCESSES

Dr Vic Law, -
Enterprise Ireland Technology Development Award (€380k)

Dr Vladimir Milosavljevic
- Enterprise Ireland Innovation Partnership Award with Intel Ireland (€200k)

Prof. Miles Turner –
Science Foundation Ireland Principal Investigator Grant (€900k)

NCPST was invited to submit a full proposal for Science Foundation Ireland Strategic Research Cluster Grant Awards

www.ncpst.ie

Young Researcher in NCPST wins Enterprise Ireland Technology Development Award

Dr Shantanu Karkair has recently been successful in his application to Enterprise Ireland for support under the Technology Development Phase of their Commercialisation Fund. Dr Karkari, who has just completed an Enterprise Ireland Proof of Concept project (€90k), was awarded just under €400,000 over three years to undertake this potentially groundbreaking project. The project will look at the development of an Electron Density Sensor as an advanced virtual metrology sensor for plasma technologies. It will be particularly useful for the validation of local plasma conditions, for process control and for routine fault identification in industrial plasma processing tools.



Dr Karkari being congratulated by Professor Miles Turner, Director, NCPST

ASSOCIATION EURATOM DCU Fusion Energy Research in Ireland

Association EURATOM DCU, established in 1996 with partners in University College Cork have successfully concluded contract negotiations with the European Commission to extend Ireland's participation in this Fusion Energy Research Programme at least to the end of 2013. This extension will be worth between €4M and €5M to the Irish researchers, lead by Professor Miles Turner, over the period 2008-2013. The Irish Association contributes to the European Research effort which is focusing on the construction of the ITER Fusion machine in Cadarache, France.

Dr Deirdre Boilson, a research officer with the Association EURATOM DCU which is hosted by the National Centre for Plasma Science & Technology recently appeared on the new RTE show "Science Friction" with Liz Bonnin (12 February 2008) explaining the major differences between Fission and Fusion power. Dr Boilson who works on the development of the heating system for the ITER project spends a significant amount of her time working closely with colleagues both in CEA Cadarache, France and IPP Garching, Germany.



Dr Deirdre Boilson, Association Euratom DCU (centre) with colleagues from CEA Cadarache.

For further information on fusion energy research please visit www.ncpst.ie or www.iter.org or contact Professor Miles Turner, Head of Research Unit, Association EURATOM DCU, email: miles.turner@dcu.ie

Upcoming Conferences/ Workshops

- European Fusion Workshop 1-3 December 2008, Cork
- Fusion Expo, November 2008, DCU

INTERNATIONAL WORKSHOP ON RADIO FREQUENCY DISCHARGES

Between June the 11th and 13th 2007, more than seventy plasma scientists and engineers gathered amid the beautiful surroundings of All Hallows College in Drumcondra for three days of intensive discussions, focusing on outstanding problems in radio-frequency discharge research. Highlights of the proceedings were three keynote talks by acknowledged leaders of the field, Rod Boswell (Australian National University), Valery Godyak (Osram Sylvania) and Michael Lieberman (University of California at Berkeley). The keynote speakers expertly surveyed the field, and were followed by topical invited speakers from around the world, including representatives of major industrial laboratories. Each of the invited speakers focused on a problematic area. These presentations excited lively discussion, which continued over meals and indeed in certain local licensed

premises after the formal business had ended. Some thirty poster presentations were also made, many of them by research students. Indeed the meeting as a whole was attended by many younger researchers.

At the conclusion, the joint organisers, Miles Turner of NCPST and Pascal Chabert of Ecole Polytechnique, announced that the meeting had been so productive and successful as to justify a repeat, which will be organised in France in 2009. Many of the participants felt that the meeting had been an outstanding success, and had given the field a new sense of community and direction. There was enthusiasm at the prospect a similar gathering in 2009.



PLASMA PROCESSES FOR BIOMEDICAL APPLICATIONS ONE-DAY WORKSHOP

A one-day workshop was held in DCU on Thursday, 24th May 2007. The purpose of this workshop was to bring together the community of researchers working in this highly exciting field in order to identify common areas of interest and expertise, as well as experimental capabilities.

Low-temperature plasma processes are increasingly used for frontier applications in biology and medicine.

The Workshop was opened by Professor Miles Turner, Director, National Centre for Plasma Science & Technology (www.ncpst.ie) Dr Jean-Paul Mosnier was the Workshop Chair. The format was a series of talks followed by a poster session.



Professor Miles Turner, Director, NCPST, Dr Lisa Looney, NCPST & Dr Jean-Paul Mosnier, Workshop Chair, NCPST

National Centre for Plasma Science & Technology
Dublin City University
Glasnevin
Dublin 9
Ireland

Tel:
+353 1 7005382

Fax:
+353 1 7008484

Website:
www.ncpst.ie

Email:
ncpst@dcu.ie