European Summer School

"Low Temperature Plasma Physics: Basics and Applications"

October 8 – 13, 2005

and

"Master Class: Microplasmas"

October 13 – 15, 2005

Physikzentrum Bad Honnef

Chairman: Prof. Dr. J. Winter, Ruhr-Universität Bochum
Co-Chairman: Prof. Dr. D.C. Schram, Technical University Eindhoven

Organization: Dr. M. Böke / P. Burkhardt

Support:

CPS CENTRUM VOOR PLASMAFYSICA EN STRALINGSTECHNOLOGIE

Arbeitsgemeinschaft PLASMAPHYSIK

CENTER OF EXCELLENCE RUHR-UNIVERSITY BOCHUM PLASMA SCIENCE AND TECHNOLOGY

Graduiertenkolleg GK1051 *Sonderforschungsbereich SFB591*

Scope of the Course and Master Class

The level of the course is aimed at:

Ph.D.-students in first year

Diploma- and M.-Sc.-students in last year

The aim of the course is to make the students become acquainted with the up-to-date status of the field of low temperature plasma physics. It is assumed that the students have followed introductory physics courses in their home university. However, the basic principles will be summarized at the beginning of the course. The course offers a broadening of knowledge in plasma physics and in the interaction of plasmas with surfaces including a description of advanced diagnostics. In addition, the students will be able to interact with the teachers of the course and they will meet fellow-students from other universities in Europe during the Course and the Master Class. During the course a special session will be devoted to presentations of the students to encourage interaction. Participants are invited to bring with them presentation material in form of posters.

All lectures and discussions are in English.

Well-known experts in the field will present lectures in the following areas:

- fundamentals of plasma physics,
- plasma sources,
- thermal and low pressure plasmas,
- atomic processes,
- electron kinetics,
- diagnostics and plasma spectroscopy,
- modelling,
- plasma-surface interactions,
- etc...

During the **Master Class** the topic of **Microplasmas** will be discussed at a level of forefront research.

Please Notify:

Breakfast, lunch and dinner:

Breakfast, lunch and dinner are organized by the Physikzentrum. Please notify that every meal starts punctually.

Except from the Sunday Conference Dinner all **beverages are not included** in the course fee. After putting your name on a list you may take beverages out of two refrigerators. We kindly ask you to pay the total amount for your beverages at the office of the Physikzentrum (room # 1) **before** you leave.

Lecture Notes:

The lecture notes are meant to give support to the students attending the course. Additional notes and the presentations will be also made available after the school through the website of the school (www.rub.de/ep2/cpt).

Hence, the distribution is restricted to the students attending the course and reproduction of the notes or parts of the notes is not permitted without permission of the authors.

Poster Session:

The poster session will take place on Monday evening in the foyer of the lecture hall. The participants who present posters are invited to display their posters during the whole course. The maximum poster size is 90 cm width x 110 cm height.

Internet Access:

Internet Access is possible in most of the rooms of the Physikzentrum through wireless LAN. In addition, five computers are available for participants in the computer room.

Program of the School

Saturday, Oct. 8: **Arrival/Registration from 17.00 - 21.00**

Sunday, Oct. 9:

08.30-08.45	Welcome and introduction
08.45-10.15	Fundamentals of Gas Discharges I *(N.St.J. Braithwaite, The Open University Oxford)*
10.30-12.00	Fundamentals of Gas Discharges II *(M.C.M. van de Sanden, TU Eindhoven)*
14.00-15.30	Capacitively and Inductively Coupled Discharges *(U. Czarnetzki, CPST Bochum)*
16.00-17.30	Microwave Discharges, Surface Wave Discharges *(J. Berndt, CPST Bochum)*
18.00	**Conference Dinner**

Monday, Oct. 10:

08.30-10.00	ECR and Helicon Discharges *(M. Krämer, CPST Bochum)*
10.30-12.00	High Pressure Thermal Plasmas and Sources *(J. Heberlein, U Minnesota)*
14.00-16.30	Electron Kinetics in Atomic and Molecular Plasmas Fluid Modeling of Plasma Discharges *(L.L. Alves, IST Lisbon)*
17.00-18.30	Diagnostics: IR-Techniques *(I. Möller, CPST Bochum)*
19.00-21.30	Poster Session

Tuesday, Oct. 11:

08.30-10.00	Modelling of Low Temperature Plasmas: Global Models *(M. Turner, U Dublin)*
10.30-12.00	MC Models of Electron and Ion Transport *(S. Longo, U Bari)*
Afternoon	**Outing**
20.00-21.30	Evening Lecture: The Universe – A World of Plasmas *(H. Kersten, INP Greifswald)* (a popular evening lecture with experiments)

Wednesday, Oct. 12:

08.30-10.00	Dusty Plasmas *(H. Kersten, INP Greifswald)*
10.30-12.00	Corona and Barrier Discharges *(U. Kogelschatz, Hausen)*
14.00-15.30	Basics of Plasma Spectroscopy *(U. Fantz, U Augsburg)*
16.00-17.30	Surface Processes in Plasmas *(A. von Keudell, U Bochum)*
19.00-??	Workshop (for interested students): Let's play with a Boltzmann code

Thursday, Oct. 13:

08.30-10.00	Diagnostics III: Laser based Diagnostics *(G.M.W Kroesen, U Eindhoven)*
10.30-12.00	Molecule Formation in Plasmas *(R.A.H Engelen, TU Eindhoven)*
12.00	Closing. End of the School

Master Class: Microplasmas

Thursday, Oct. 13: Arrival/Registration (17.00-21.00)

Friday, Oct. 14:

08.30-10.00	Micro Hollow Cathode Discharges and other Microplasmas *(K. Schoenbach, U Norfolk)*
10.30-12.00	Diagnostics of Microdischarges in a DBD *(H-E. Wagner, U Greifswald)*
14.00-15.30	Modelling *(J.P. Boeuf, U Toulouse)*
16.00-17.00	Microdischarge Properties in DBDs and in Spat. Confined Geometries *(U. Kogelschatz, Hausen)*

Saturday, Oct.15:

08.30-10.00	Microstructured Electrode Arrays: Basics and Applications *(C. Schrader, U Braunschweig)*
10.30-12.00	Design and Control of Microplasma Devices / Perspectives *(K. Tachibana, U Kyoto)*
12.00	*Closing, End of the Master Class*