

European Summer School

# "Low Temperature Plasma Physics: Basics and Applications"

October 9 – 14, 2010

Physikzentrum Bad Honnef



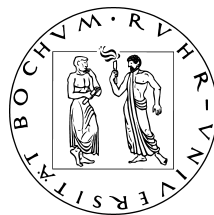
**Chairman:** Prof. M.C.M. van de Sanden (TU Eindhoven)  
Prof. J. Winter (Ruhr-Universität Bochum)

**Organization:** Dr. R. Engeln/ J. Loonen (TU Eindhoven)  
Dr. M. Böke/ V.M. Scharf (Ruhr-Universität Bochum)

**Webpage:** [www.plasma-school.org](http://www.plasma-school.org)

**Support:**

*Arbeitsgemeinschaft  
PLASMAPHYSIK*



*Graduiertenkolleg GK1051*

*Sonderforschungsbereich SFB591*

# Scope of the Course

## **1. The level of the course.**

The level of the course is aimed at *Ph.D.-students in first year* and *Diploma- and M.-Sc.-students in last year*.

## **2. The aim of the course.**

The aim of the course is to make the students become acquainted with the present 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 and the rest of the world. Participants are invited to bring with them presentation material in form of posters.

## **3. All lectures and discussions are in English.**

## **4. 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...

## **Please notice:**

### **Breakfast, lunch and dinner:**

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

Breakfast October 10 and Friday October 15 starts at 8.00 hours

Breakfast: 7.30 hours, on all other days

lunch: 12.15 hours,

dinner: 18.00 hours.

**Invited speakers and some other participants will also stay overnight in hotel Seminaris and have breakfast in the same hotel. All other meals (and drinks!) will be available at the Physikzentrum – the School location.**

On Monday evening there will be the Summer School dinner.

**Beverages are not included** in the course fee, except for the drinks during the Summer School dinner. After putting your name on a list, you may take beverages out of the refrigerators. **We kindly ask you to pay** the total amount for your beverages at the office of the Physikzentrum (room #1) **before you leave Bad Honnef.**

### **Lecture Notes**

The lecture notes are meant to give support to the students attending the course. Hence the distribution is restricted to the students attending the course and reproduction of (part of) the lecture notes is not permitted without permission of the authors.

### **Poster session**

The poster session will take place on Monday evening on the ground floor. The participants who present posters are kindly asked to display their posters during the whole course.

### **Entrance Physikzentrum**

To enter the Physikzentrum, please use the door code (phone-like keyboard on the right hand side of the main entrance) for entering the Physikzentrum in Bad Honnef. This code is valid during the whole School. **The code is : C2010. C**” stands for “clear” and is a reset in a case of a [previous error](#)

# Program of the School 2010

**Saturday, Oct. 9:** Arrival/Registration from 17.00 - 21.00 (Dinner included)

**Sunday, Oct. 10:**

09.00-09.30	Welcome and introduction (Plot of the School, Plasma Science)
09.30-10.45	Introduction into Plasma Physics ( <i>M.C.M. van de Sanden, Eindhoven University of Technology</i> )
11.00-12.00	Fundamentals of Gas Discharges I ( <i>M.A. Lieberman, U of California, Berkeley</i> )
14.00-15.30	Fundamentals of Gas Discharges II ( <i>M.A. Lieberman, U of California, Berkeley</i> )
16.00-17.30	Fundamentals of Gas Discharges III ( <i>M.A. Lieberman, U of California, Berkeley</i> )
19.00-21.30	Poster Session

**Monday, Oct. 11:**

08.30-10.00	Plasma diagnostics I: Measuring the Electron Density and Ion Flux ( <i>N.St.J. Braithwaite, The Open University Oxford</i> )
10.30-12.00	Modelling of plasmas ( <i>A. Bogaerts, University of Antwerp</i> )
14.00-15.30	Microwave Generated Plasmas ( <i>J. Berndt, GREMI Orléans</i> )
16.00-17.30	Plasma Diagnostics II: Basics of Plasma Spectroscopy ( <i>D.C. Schram, Eindhoven University of Technology</i> )
17.30-18.00	Summary
18.00	Summer School Dinner

**Tuesday, Oct. 12:**

08.30-10.00	High Pressure Thermal Plasmas and Sources ( <i>A. Murphy, CSIRO, Australia</i> )
10.30-12.00	Capacitively and Inductively Coupled Discharges ( <i>T. Gans, Belfast University</i> )
<b>Afternoon</b>	<b>Outing</b>

**Wednesday, Oct. 13:**

08.30-10.00	Corona and barrier discharges ( <i>C. Leys, Ghent</i> )
10.15-12.15	Electron Kinetics in Atomic and Molecular Plasmas ( <i>L.L. Alves, IST Lisbon</i> )
14:00-15:30	Fluid Modeling of Discharge Plasmas ( <i>L.L. Alves, IST Lisbon</i> )
16:00-17:30	Plasmas and Liquids ( <i>P. Bruggeman, Eindhoven University of Technology</i> )
17.30-18.00	Summary
20.00-21.30	Evening Lecture: Plasmas in Hollywood ( <i>A. von Keudell, CPST Bochum</i> ) (a popular evening lecture with plasmas in movies)

**Thursday, Oct. 14:**

08.30-10.00	Plasma Diagnostics III: Molecules and Radicals <i>(R. Engeln, Eindhoven University of Technology)</i>
10.30-12.00	Dusty Plasmas <i>(L. Boufendi, GREMI Orléans)</i>
14.00-15.30	Plasma-Surface Interaction: Diagnostics <i>(J. Benedikt, CPST Bochum)</i>