PLASMA SCHOOL
Bad Honnef

The XXth International School

"Low Temperature Plasma Physics: Basics and Applications"

October 1 – 6, 2016

and Master Class

"Plasma Synthesis of Nanoparticles"

October 6 – 8, 2016

Physikzentrum Bad Honnef

International Chairmen: L.L. Alves & V. Guerra (IPFN/IST, Lisbon, Portugal)

Scientific Organization: M. Böke, V. Schulz-von der Gathen, A. von Keudell (RUB)

Local Organization: V.M. Scharf (RUB)

Webpage: http://www.plasma-school.org

Support:

RESEARCH DEPARTMENT
Plasmas with Complex Interactions

RUB SFB-TR 87 IST ipfn INSTITUTO DE PLASMAS E FUSÃO NUCLEAR

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. 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,
- modeling,
- plasma-surface interactions,
- etc.

General information

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

breakfast: 7.30
lunch: 12.30
dinner: 18.30

All other meals (and drinks!) will be available at the Physikzentrum – the school location. WIFI is free of charge and a computer room is available as well. There is even a piano: Please bring your music sheets with you!

Beverages are not included in the course fee, except for the drinks during the School Dinner on Monday evening. 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.**

School Dinner
On Monday evening, there will be the School Dinner at the historic winery Weingut Broel in Rhöndorf.
During the dinner, we will celebrate the XXth anniversary of the School and Master Class, evoking the early years in the presence of very special guests.

Excursion
The social program includes an excursion to Cologne.

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: C2016. C" stands for "clear" and is a reset in a case of a previous error.

Format of the School & Master Class

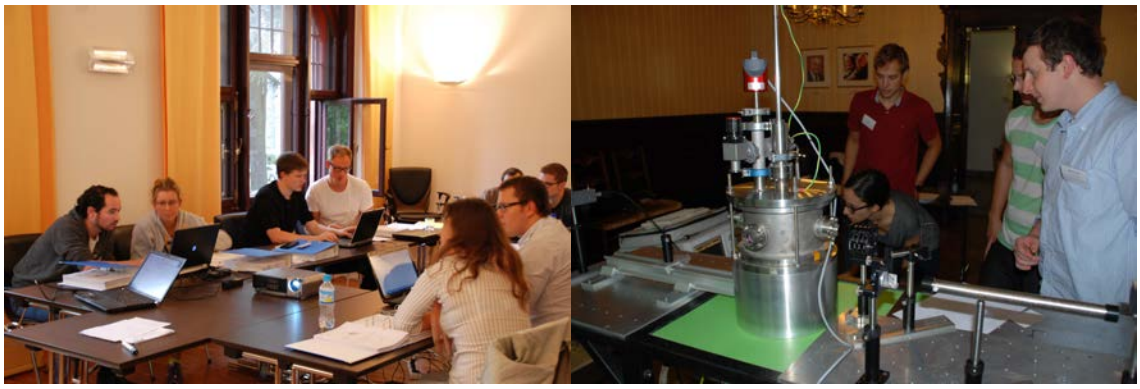
Lectures
The School & Master Class is organized around theoretical lectures (typically with 90 min. duration plus discussion), given by well-known experts in the field with high didactic qualification.
All lectures and discussion are in English.

Poster sessions
Participants are invited to present their research work during Poster Sessions, integrated in the program.
The School's poster session will take place on Sunday evening (20.00) on the ground floor. The posters should be displayed during the whole course.
The Master Class's poster session will take place on Friday during the coffee break.

Forum with teachers
The School includes a daily forum with all the active teachers of the day, to promote a deeper interaction between students and teachers. The forum will take place just before dinner.

Lecture Notes
A digital copy of the presentations will be distributed after the lectures to the students attending the School / Master Class. The lecture notes are for exclusive benefit of the attendants and their transmission to third parties is forbidden without permission of the authors.
http://www.plasma-school.org/notes/index.html.en
User: cpt
Password: Langmuir

Workshops
To further promote interactions and complement training, the School includes a modelling workshop "Hands on a Boltzmann solver" and an experimental workshop "How to get plasma parameters? From theory to reality".
The workshops are limited to a number of interested students.



Program of the School 2016

Saturday, Oct. 1: Arrival/Registration from 17.00 - 21.00 (dinner included)

Sunday, Oct. 2:

08.45-09.00	Welcome and introduction (Plot of the School, Plasma Science) (*M. Böke, Bochum & L.L. Alves and V. Guerra, Lisbon*)
09:00-10.30	Introduction I: Fundamentals of Plasma Physics (*A. von Keudell, Bochum)*
10.30-10.45	Coffee break
10.45-12.15	Introduction II: Fundamentals of Plasma Physics *(A. von Keudell, Bochum)*
12.30-13.30	Lunch
13.45-15.15	Plasma modeling I: Modeling of plasmas (*A. Bogaerts, Antwerp*)
15.15-15.30	Coffee break
15.30-17.00	Plasma diagnostics I: Basics of plasma spectroscopy *(V. Schulz-von der Gathen, Bochum)*
17.00-17.30	Forum with teachers
18.30-20.00	Dinner
20.00	Poster Session

Monday, Oct. 3:

09.00-10.30	Plasma diagnostics II: Measuring electron density and ion flux *(N. Braithwaite, Milton Keynes)*
10.30-10.45	Coffee break
10.45-12.15	Plasma sources I: Magnetron discharges (*A. Hecimovic, Bochum*)
12.30-13.30	Lunch
13.45-15.15	Plasma modeling II: Global models *(M. Turner, Dublin)*
15.15-15.30	Coffee break
15.30-17.00	Plasma sources II: High pressure thermal plasmas and sources *(A. Murphy, Sydney*)
17.00-17.30	Forum with teachers
18.30	School Dinner – celebration of XXth anniversary of School & Master Class

Tuesday, Oct. 4:

09.00-10.30	Plasma modeling III: Electron kinetics in atomic and molecular plasmas *(L.L. Alves, Lisbon)*
10.30-10.45	Coffee break
10.45-12.15	Plasma modeling IV: Fluid modeling of discharge plasmas *(L.L. Alves, Lisbon*)
12.30-13.30	Lunch
14.00-evening	**Excursion or Workshops** Modeling Workshop: “Hands on a Boltzmann solver” (*L.L. Alves, Lisbon*) Experimental Workshop: “How to get plasma parameters? From theory to reality” (*G. Henrion & O. Guaïtella, "Réseau Tech. Plasmas Froids", France*)
18.30	Dinner

Wednesday, Oct. 5:

09.00-10.30	Plasma sources III: DBDs (Corona and barrier discharges) (*O. Guaïtella, Paris*)
10.30-10.45	Coffee break
10.45-12.15	Plasma sources IV: High density sources: ICPs, Microwaves, ECRs *(U. Czarnetzki, Bochum)*
12.30-13.30	Lunch
13:45-15:15	Plasma diagnostics III: Advanced optical diagnostics (*R. Engeln, Eindhoven)*
15.15-15.30	Coffee break
16:00-17:30	Plasma diagnostics IV: Plasma-Surface Interactions (*J. Benedikt, Bochum*)
17.00-17.30	Forum with teachers
18.30	Dinner

Thursday, Oct. 6:

09.00-10.30	Plasma sources V: CCRF & dusty plasmas *(L. Boufendi, Orléans)*
10.30-10.45	Coffee break
10.45-12.15	Plasma technologies *(P. Bruggeman, Minnesota)*
12.30-13.30	Lunch

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Program of the Master Class 2016

Thursday, Oct. 6: Arrival/Registration from 17.00 - 21.00 (Dinner included)

All lectures have duration of ~1.15h + 15min for final extended discussion

Friday, Oct. 7:

09.00-10.30	Atmospheric pressure plasma synthesis of nanomaterials and the influence of charged species fluxes *P. Maguire (Ulster)*
10.30-10.45	Coffee break
10.45-12.15	Understanding generation pathways of silicon nanoparticles in non-equilibrium atmospheric plasmas *J. Benedikt (Bochum)*
12.30-13.30	Lunch
13:45-15.15	Discharge in liquids: from basic phenomena to nanoparticle synthesis *T. Belmonte (Nancy)*
15:15-16:30	Master Class Poster Session (+coffee and biscuits)
16:30-18:00	Engineering antibacterial nanoparticles using atmospheric pressure plasmas *A. Nikiforov (Ghent)*
18.30	Dinner

Saturday, Oct. 8:

09.00-10.30	Plasma deposition of heterogeneous nanostructures with photoactivity *F. Aparício (Sevilla)*
10.30-10.45	Coffee break
10.45-12.15	Growth dynamics of silicon nanostructures in a plasma environment *H. Vach (Palaiseau)*
12.15-12.20	Closure
12.30-13.30	Lunch