



PlasTEP

plasma for environment protection

PlasTEP Summer School and Training Course in Warsaw/ Szczecin

Plasma technology for environment protection

July 25th – August 5th, 2011

Programme

July 25th **Opening in Warsaw**

13.00 – 15.00

Arrival of Participants

Opening ceremony

Introduction of PlasTEP project and participants

Introduction of Institute of Nuclear Chemistry and Technology and of Warsaw University of Technology, Department of Chemical and Process Engineering

17.00 – 20.00

Visit of old town/ come together

July 26th **Overview about plasma processes and technologies**

09.00 – 10.30

Characterisation and classification of plasma sources

Lecturer: Dr. Indrek Jõgi/ Dr. Matti Laan, University of Tartu, Estonia

11.00 – 12.30

Methods of plasma generation and plasma sources

Lecturer: Dr. Indrek Jõgi/ Dr. Matti Laan, University of Tartu, Estonia

12.30 – 13.30

Lunch break

13.30 – 15.00

Non-equilibrium plasma for environment protection

Lecturers: Prof. Hana Baránková/ Ångström Laboratory and Prof. Ladislav Bardos/ Ångström Laboratory, Sweden

15.30 – 17.00

NOx conversion chemistry in the plasma, particulate matter abatement

Lecturers: Prof. Hana Baránková/ Ångström Laboratory and Prof. Ladislav Bardos/ Ångström Laboratory, Sweden

July 27th **Emission and ambient air protection**

09.00 – 10.30

Industrial processes and emission of pollutants

Lecturer: Prof. Dagnija Blumberga/ Riga Technical University, Lithuania

11.00 – 12.30

Classification of the main pollutants. Emissions sources

Lecturer: Assoc. Prof. Saulius Vasarevičius / Vilnius Gediminas Technical University, Lithuania

12.30 – 13.30

Lunch break



Baltic Sea Region
Programme 2007-2013

Part-financed by the European Union
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- 13.30 – 15.00 Air cleaning technologies
Lecturer: Assoc. Prof. Saulius Vasarevičius / Vilnius Gediminas Technical University, Lithuania
- 15.30 – 17.00 Emission standards and regulations. Environmental impact
Lecturer: Assoc. Prof. Saulius Vasarevičius/ Vilnius Gediminas Technical University, Lithuania
- July 28th** **Eco-efficiency and cost-benefit analysis of plasma technologies**
- 09.00 – 10.30 Cost-benefit analysis of plasma technologies
Lecturer: Assoc. Prof. Andra Blumberga/ Riga Technical University, Latvia
- 11.00 – 12.30 Methods of environmental and eco-efficiency assessment
Lecturer: Assoc. Prof. Dainius Martuzevičius/ Kaunas University of Technology, Lithuania
- 12.30 – 13.30 Lunch break
- 13.30 – 17:00 Eco-efficiency assessment of selected plasma technologies – interactive research on selected case studies
Lecturers: Assoc. Prof. Dainius Martuzevičius/ Kaunas University of Technology, Lithuania
- July 29th** **Plasma and catalysts**
- 09.00 – 10.30 Plasma and catalysts
Lecturer: Prof. David Cameron/ Lappeenranta University of Technology, Finland
- 11.00 – 12.30 Catalytic thin film coatings
Lecturer: Prof. David Cameron/ Lappeenranta University of Technology, Finland
- 12.30 – 13.30 Lunch break
- 13.30 – 15.00 Plasma spray deposition and characterisation of hydrocarbon containing coatings for environmental applications
Lecturer: Prof. Liutauras Marcinauskas/ Lithuanian Energy Institute, Lithuania
- 15.30 – 17.00 Interactive case study
Lecturer: Prof. David Cameron/ Lappeenranta University of Technology, Finland and Prof. Liutauras Marcinauskas/ Lithuanian Energy Institute, Lithuania
- July 30th** **Social event**
- July 31st** **Travel to Szczecin**
Short introduction to Szczecin
Introduction of the West Pomeranian University of Technology



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- August 1st** **Plasma for water treatment and NOx/SOx reduction**
09.00 – 10.30 Plasma sources for the treatment of water
Lecturer: Prof. Mirosław Dors/ Institute of Fluid-Flow Machinery, Polish Academy of Sciences, Poland
- 11.00 – 12.30 Plasma-induced processes in destruction of organic compounds and microorganisms
Lecturer: Prof. Mirosław Dors/ Institute of Fluid-Flow Machinery, Polish Academy of Sciences, Poland
- 12.30 – 13.30 Lunch break
- 13.30 – 15.00 Low temperature oxidation of NOx/SOx: principles and pilot tests”
Lecturer: Dr. Eugen Stamate/ National Laboratory for Sustainable Energy of the Technical University Denmark, Denmark
- 15.30 – 17.00 Interactive case study for NOx/ Sox reduction
Lecturer: Dr. Eugen Stamate/ National Laboratory for Sustainable Energy of the Technical University Denmark, Denmark
- August 2nd** **Electron Beam Flue Gas Treatment**
09.00 – 13.00 Pomorzany Power Plant visit and lectures on site experiences from exploitation of industrial EBFGT plant and perspectives of future development.
Lecturers: Dr Andrzej Pawelec/ Institute of Nuclear Chemistry and Technology, Poland
- 13.00 – 14.00 Lunch break
- 14.00 – 16.00 Discussion
- 16.00 – 18.00 Get – Together
- August 3rd** **Power management of plasma sources**
09.00 – 12.00 Power management for different non-thermal plasma devices
Lecturer: Dr inż. Marcin Hołub/ West Pomeranian University of Technology, Poland
- 12.00 – 13.00 Lunch break
- 13.00 – 17.00 Laboratory experiments: High frequency supply of DBD reactors, measurement of power delivered to plasma reactors, plasma reactor SEI and ozone productivity calculations
Mgr. Inż. Tomasz Jakubowski, Mgr Inż. Michał Balcerak, Mgr. Inż. Marcin Marcinek, Mgr. Inż. Michał Bonisławski/ West Pomeranian University of Technology, Poland
- August 4th** **Removal of VOCs from ventilation air by plasma**
07.30 – 10.00 Travel to the city Greifswald



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- 10.00 – 12.00 VOC destruction with low temperature plasma sources.
- Plasma sources for the treatment of exhaust gases (especially VOC-containing gases)
- Plasma processes and plasma-based processes for VOC-decomposition and deodorisation
- Removal of particulate matter by means of non-thermal plasmas
Lecturer: Dr. Ronny Brandenburg/ Leibniz-Institute for Plasma Science and Technology
- 12.00 – 13.00 Lunch break
- 13.00 – 15.00 Laboratory visit at the Leibniz-Institute for Plasma Science and Technology
- 15.00 – 16.00 Visit of Wendelstein X at the Max-Planck Institute for Plasma Research
- 16.00 – 20.00 Trip to the Baltic Sea and barbeque
- 20.00 – 22.30 Travel back to Szczecin

August 5th Test and Evaluation

- 09.00 – 11.00 Test
- 11.00 – 13.00 Evaluation
- 13.00 – 14.00 Lunch break
- 14.00 – 15.00 Closing ceremony



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