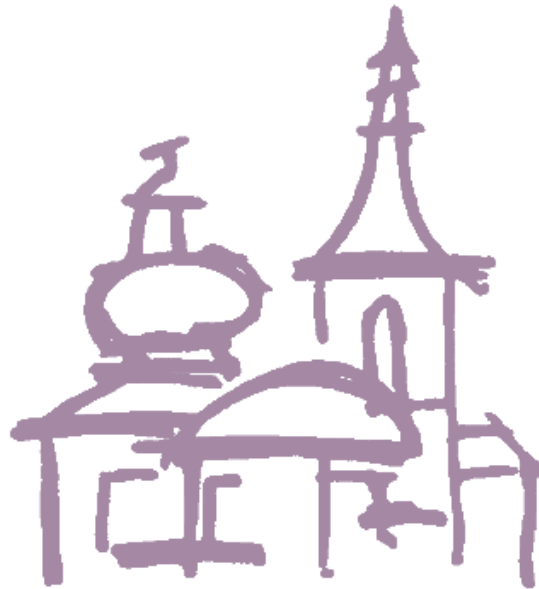


# 18<sup>TH</sup> EUREGIONAL WELTPP

*Workshop on the Exploration of Low Temperature Plasma Physics*



**December 3 and 4, 2015**

**"Rolduc"**

**Kerkrade, the Netherlands**

**Jointly sponsored and organized by**

**RUHR  
UNIVERSITÄT  
BOCHUM**

**RUB**

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Technische Universiteit  
**Eindhoven**  
University of Technology

**RESEARCH DEPARTMENT**  
Plasmas with Complex Interactions

UNIVERSITY *of York*

 **SFB-TR 87**

 **DIFFER**  
Dutch Institute for  
Fundamental Energy Research

 **Ocean  
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# 18<sup>TH</sup> EUREGIONAL WELTPP

## *Workshop on the Exploration of Low Temperature Plasma Physics*

Welcome to the 18<sup>th</sup> *Workshop on the Exploration of Low Temperature Plasma Physics* (WELTPP-18). This workshop is intended for active scientists working in the field of low temperature plasma physics.

The aim of this workshop is to create a forum for young low temperature plasma scientists, that is graduate students and postdoctoral researchers, to meet and learn from each other, exchange knowledge, present results and establish new contacts. The emphasis is on the presentation of the work of the people new in this field.

The workshop is sponsored and organized by the Research Department "Plasmas with complex interactions" of the Ruhr-Universität Bochum, SFB-TR 87, and the Eindhoven University of Technology, more precisely by the groups Plasma and Materials Processing (PMP) and Elementary Processes in Gas Discharges (EPG) in close collaboration with the Dutch Institute for Fundamental Energy Research (DIFFER) and the York Plasma Institute. This year WELTPP-18 is also kindly supported by Ocean Optics B.V.

We wish you a fruitful and pleasant conference.

Organizing committee:

Jan van Dijk (Eindhoven University of Technology)  
Richard Engeln (Eindhoven University of Technology)  
Jeanne Loonen (Eindhoven University of Technology)  
Jan Trieschmann (Ruhr-Universität Bochum)  
Erik Wagenaars (York Plasma Institute)  
Stefan Welzel (FOM Institute DIFFER & Eindhoven University of Technology)





Oral presentations



**Friday, December 4<sup>th</sup>**

**08.00 Breakfast in the “Grote Eetzaal”**

***Please return your room key to the reception before attending Session 4!***

**Session 4 Plasma Chemistry (Conference room 4)**

- 09.00-09.20 O11 Chemistry of neutral and charged species in the effluent of the micro atmospheric pressure plasma jet in water-helium admixture**  
G. Willems (Ruhr-Universität Bochum)
- 09.20-09.40 O12 Conversion of CO<sub>2</sub> via radio-frequency atmospheric pressure plasmas**  
A.P.S. Foote (York Plasma Institute)
- 09.40-10.00 O13 Microwave plasma power interruption to promote non-equilibrium conversion of CO<sub>2</sub>**  
D.C.M. van den Bekerom (DIFFER)
- 10.00-10.20 O14 Characterisation of a novel dielectric barrier surface discharge**  
B. Offerhaus (Ruhr-Universität Bochum)

**10.30 Coffee/Tea in the Foyer**

**11.00-12.30 Poster session (Conference room 2)**  
All poster numbers greater than P24 can be posted

**12.30 Lunch in the “Grote Eetzaal”**

**Session 5 Diagnostics (Conference room 4)**

- 13.45-14.05 O15 Spatiotemporal diagnostics of surfatron microwave discharge with power modulated by sinusoidal envelope**  
P. Synek (Masaryk University, Brno)
- 14.05-14.25 O16 Two different resonance behaviors of curling probe; an analytic approach**  
A. Arshadi (Ruhr-Universität Bochum)
- 14.25-14.45 O17 A kinetic approach to the study of ideal multipole resonance probe**  
J. Gong (Ruhr-Universität Bochum)
- 14.45-15.05 O18 Spectral kinetic simulation of the planar multipole-resonance-probe**  
M. Friedrichs (Ruhr-Universität Bochum)

**15.05 Closure of the workshop**







Poster presentations



*Thursday, December 3<sup>rd</sup>*

- P1: **Fast measurements of carbon sputtering under transiently changing plasma flux**  
D. Aussems, *Dutch Institute for Fundamental Energy Research*
- P2: **Direct production of fuels from captured CO<sub>2</sub>**  
T. Belete, *Dutch Institute for Fundamental Energy Research*
- P3: **Separated effects of ions, metastables and photons on the properties of barrier layers on polymers**  
B. Biskup, *Ruhr-University Bochum*
- P4: **Effect of nitrogen on the CO<sub>2</sub> to CO dissociation in a DBD**  
T. Boumans, *Eindhoven University of Technology*
- P5: **The branching characteristics of positive streamers in nitrogen-oxygen mixtures**  
S. Chen, *Eindhoven University of Technology*
- P6: **A numerical study of the fast axial flow CO<sub>2</sub> laser using Plasimo**  
Marc van Dort, *Eindhoven University of Technology*
- P7: **QCM measurements in high power impulse magnetron sputtering**  
A. Eitrich, *Ruhr-Universität Bochum*
- P8: **Atmospheric pressure roll-to-roll plasma enhanced CVD of silica-like moisture barrier films: The nature and impact of film defects**  
F.M. Elam, *FUJIFILM Manufacturing Europe B.V.*
- P9: **Experimental Heating Analysis of High Frequency RF-CCP**  
Ü. Erözbeğ, *Middle East Technical University, Ankara*
- P10: **Improvement of the hybrid model for glow discharge through incorporation of the electron energy balance equation**  
E. Eylenceoğlu, *Middle East Technical University, Ankara*
- P11: **Langmuir probe measurements of argon with hydrogen, nitrogen and oxygen in a double ICP**  
M. Fiebrandt, *Ruhr University Bochum*
- P12: **Introduction to molecular dynamics simulations for resistive switching in nanoionic devices**  
T. Gergs, *Ruhr-Universität Bochum*
- P13: **Time- and space-resolved characterization of an N<sub>2</sub> spark discharge by 2-λ-optical emission spectroscopy**  
S. Groeger, *Ruhr University Bochum, Germany*
- P14: **Time-resolved measurement of film growth during reactive high-power impulse magnetron sputtering (HiPIMS) of chromium**  
K. Grosse, *Ruhr-Universität Bochum*
- P15: **Chemical analysis of the reactive species generated in watertreated by the effluent of a μAPPJ**  
M. Mokhtar Hefny, *Ruhr-Universität Bochum, Bochum*
- P16: **In-situ studies of ultra-thin plasma polymer barrier films**  
Ch. Hoppe, *University of Paderborn*
- P17: **Propagation of streamers generated with sub-nanosecond variable rise time, variable pulse duration, high-voltage pulses**  
T. Huiskamp, *Eindhoven University of Technology*
- P18: **Towards self-consistent diffusion models in plasmas used for deposition**  
J.F.J. Janssen, *Eindhoven University of Technology*
- P19: **Modeling of combined laser ablation-hollow cathode glow discharge plasma emission source**  
S Karatodorov, *Eindhoven University of Technology*
- P20: **Study of an extensive CO<sub>2</sub> chemistry via a Global Model**  
P.M.J. Koelman, *Eindhoven University of Technology*
- P21: **Spatially resolved electron density in a dielectric barrier discharge**  
F. Kogelheide, *Ruhr University Bochum*
- P22: **Plasma particle lofting – Experimental measurements using vibrations**  
D.P.J. van Leuken, *Eindhoven University of Technology*
- P23: **Electron density and temperature profiles of H<sub>2</sub>-D<sub>2</sub> and H<sub>2</sub> magnetized expanding plasmas measured by means of Thomson scattering**  
R. Leyte-González, *Eindhoven University of Technology*
- P24: **Functional nanomaterials synthesis by microplasma**  
L. Lin, *Eindhoven University of Technology*

**Friday, December 4<sup>th</sup>**

- P25: **Role of plasma-polymer interaction on evolution of atmospheric-pressure DBD**  
Y Liu, *FOM Institute*
- P26: **TALIF on CO for discharges used for solar fuel production**  
P.D. Machura, *Eindhoven University of Technology*
- P27: **Surface roughness evolution of SiO<sub>2</sub> films grown on polymeric substrate**  
A. Meshkova, *FOM Institute DIFFER*
- P28: **A2+1 REMPI probe detection of molecular oxygen**  
T. Minea, *FOM-Instituut DIFFER*
- P29: **Modeling of dual frequency capacitive discharges with pulse-modulated power input**  
S. Naggary, *Ruhr University Bochum*
- P30: **Plasma particle lofting – One million g centrifuge**  
T.W.C. Neelis, *Eindhoven University of Technology*
- P31: **Light scattering by plasma produced illumination diffusers characterized by**  
B. Platier, *Eindhoven University of Technology*
- P32: **Two dimensional Argon metastable dynamics in HiPIMS discharge**  
P. Preissing, *Ruhr-Universität Bochum*
- P33: **Ion energy distributions in EUV-induced plasmas**  
P. Reefman, *Eindhoven University of Technology*
- P34: **Coating of PET-bottles with barrier films by a microwave driven low pressure plasma process**  
M. Rudolph, *Ruhr-Universität Bochum*
- P35: **Zero dimensional model of atmospheric SMD discharge and afterglow in humid air**  
R. T. Smith, *Ruhr Universität Bochum*
- P36: **Electric field measurements on plasma bullets in N<sub>2</sub> using four-wave mixing**  
M. van der Schans, *Eindhoven University of Technology*
- P37: **Light scattering on a dusty plasma: in-situ monitoring of a single particle**  
L.P.T. Schepers, *Eindhoven University of Technology*
- P38: **Combined kinetic simulation for treatment of heavy particles within low temperature plasma**  
F. Schmidt, *Ruhr University Bochum, Germany*
- P39: **Mode analysis for a microwave driven plasma discharge: A comparison between an analytical model and numerical results**  
D. Szeremley, *Ruhr University Bochum*
- P40: **H<sub>2</sub>O Global Model with PLASIMO**  
S. Tadayon Mousavi, *Eindhoven University of Technology*
- P41: **Absolute calibration of an energy resolved ion mass spectrometer and retarding field energy analyzer**  
T.H.M. van de Ven, *Eindhoven University of Technology*,
- P42: **Power modulation of a CO<sub>2</sub> microwave discharge for efficient dissociation of CO<sub>2</sub>**  
T. Verreycken, *FOM Institute DIFFER*
- P43: **Chemical reactions in an expanding magnetized hydrogen plasma**  
R.H.J. Westermann, *Eindhoven University of Technology*
- P44: **Interaction of short UV laser pulses with a complex plasma**  
F.M.J.H. van de Wetering, *Eindhoven University of Technology*
- P45: **Differences of voltage and current driven capacitively coupled plasmas in particle-in-cell simulations**  
S. Wilczek, *Ruhr University Bochum*
- P46: **Process control orientated modeling and analysis of a reactive (O<sub>2</sub>) sputter (Ti) process**  
C. Woelfel, *Ruhr-Universität Bochum*
- P47: **Recycling CO<sub>2</sub> into sustainable hydrocarbon fuels: plasma catalytic conversion of CO<sub>2</sub> and H<sub>2</sub>O into CH<sub>4</sub>**  
A.J. Wolf, *FOM Institute DIFFER*
- P48: **Characterisation of optical diffusers produced with a low- pressure acetylene plasma**  
Y. Zondag, *Eindhoven University of Technology*