



PRESS RELEASE

Plasma technology meets plastics processing

SFB/TRR 87: New collaborative research centre approved by DFG

Aachen/Bonn, July 2010

Since July 1, the German Research Foundation (DFG) has been sponsoring the trans-regional collaborative research centre (SFB/TRR 87) for plasma technology. Coordinated by Prof. Dr.-Ing. Peter Awakowicz from Ruhr University, Bochum (RUB), and Prof. Dr.-Ing. Kirsten Bobzin from RWTH Aachen University, research teams from RWTH, RUB and the University of Paderborn have joined forces to examine fundamental issues regarding the development of plasma-assisted processes for the deposition of functional layers. Nine research institutes are participating in this joint project, officially titled "Pulsed high-power plasmas for the synthesis of nano-structured functional layers", including the Institute of Plastics Processing (IKV) at RWTH Aachen University.

Plasma technology has already played a pioneering role in modern semi-conductor technology and has made its mark in many other high-tech areas. Plasma processes are now also gaining increasing importance in the field of plastics processing. Applications include the coating of moulding tools and machine components as well as the finishing of the plastic substrates themselves. However, empirical methods are generally used in the development of new coating systems, which means that elementary principles relating to the interaction between high-performance plasmas and technical surfaces are often unavailable.

With the aid of two application examples from plastics processing – the coating of machine components with anti-adhesive and wear-resistant layers, and the development of flexible barrier coatings on thermoplastics – the team will endeavour to fill in the missing gaps in the knowledge of the relationship between plasma parameters and coatings characteristics, and to use the results for diagnostic-based process control.

The SFB, initially financed for four years, is divided into three research areas. The first covers coating systems on metal substrates for tribological applications (project area A), the second deals with new functional coatings in order to improve the barrier performance of plastic substrates (project area B), while the third will support the first two areas with studies on elementary principles of plasma processes (project area C).

In close cooperation with its partners, the IKV will perform research in two subprojects of project area B: the large-scale deposition of strain-tolerant barrier coatings on PET films and, based on the example of PP, the influence of material properties – e.g. orientations and internal stresses – on the plasma process.

This SFB will bring together scientists from the fields of plasma physics, plasma technology, plastics processing, materials science, materials engineering, mechanical engineering and interface chemistry. They will study the influence and the potential of high-performance plasmas, starting with the atom in the gaseous phase to the performance characteristics of new, theoretically conceived material systems.

www.ikv-aachen.de

www.sfbtr87.de



The following institutes are participating in the SFB/TRR 87:

Ruhr University, Bochum (RUB)

Research Group Reactive Plasmas (www.reaktiveplasmen.rub.de)
Institute for Experimental Physics II / Application oriented plasma physics (AOP)
(www.ruhr-uni-bochum.de/ep2)
Institute for Electrical Engineering and Plasma Technology
(www.aept.ruhr-uni-bochum.de)
Institute of theoretical Electrical Engineering (www.tet.rub.de)
Lehrstuhl für Werkstoffe der Mikrotechnik (www.ruhr-uni-bochum.de/wdm)

RWTH Aachen University

Institute of Plastics Processing (IKV) (www.ikv-aachen.de)
Surface Engineering Institute (IOT) (www.iot.rwth-aachen.de)
Materials Chemistry (MCh) (www.mch.rwth-aachen.de)

University of Paderborn

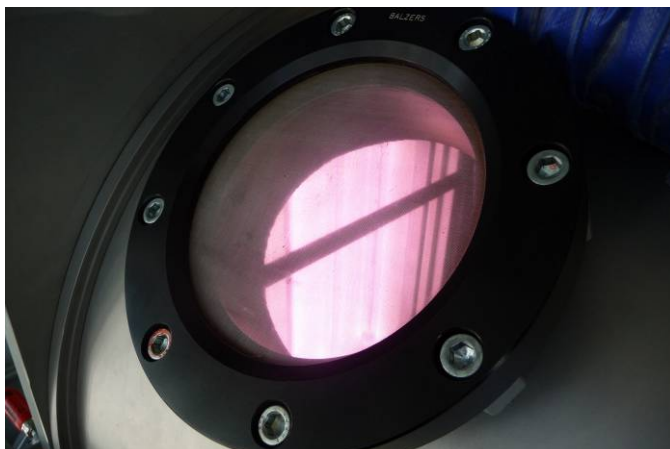
Chemical Engineering and Macromolecular Chemistry (TMC)
(www.chemie.uni-paderborn.de)

IKV contact on the topic

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View into the plasma plant at IKV laboratory (photo: IKV)