Extreme Photonics Seminar

No. 2

Language: English

Date : Jan.27(Fri), 2017, 15:00–16:00

Location : Cooperation Center, 5F Meeting Room, W524
(研究交流棟5階会議室W524)

Title : Deposition of Thin Films by Pulsed Laser Deposition (PLD) and Laser-Induced Forward Transfer (LIFT)

Speaker : **Prof. Thomas Lippert**
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Thin films of organic, polymeric, biological, and inorganic thin films are utilized in many applications, e.g. catalysis, microelectronics, sensors, food industry, tools, optics, decorative coatings, and renewable energy applications, etc.. The preparation of these thin films can be achieved with a variety of tools, ranging e.g. from chemical to physical vapor deposition methods.

We focus on the application of lasers for the deposition of thin (oxide) films using pulsed laser deposition (PLD) and laser-induced forward transfer (LIFT) for thin films with well defined structures. These films can be either applied as model systems to study fundamental material properties or they can be utilized in microdevices. Different examples for thin films deposited by the different methods will be shown for PLD in the field of energy research and for LIFT. PLD is used for the deposition of oxynitrides, which are applied in photocatalysis, and where we study the role of crystallographic orientation, but also try to identify new materials. For ion conductors (mainly for SOFC), we focus on the on the role of strain (also for Pt an the ORR), but also whether microstructures can be used to improve their mechanical properties.

LIFT is applied to deposit carbon materials selectively on the active area of sensors, which results in sensors that reveal a high sensitivity at room temperature.

Another important aspect is the detailed characterization of the films including the application of PSI's large facilities.

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