

# エクストリームフォトンクスセミナー

## *Extreme Photonics Seminar*

Language: English

日時: 平成22年 2月23日(火)  
*Date:* 15:00 ~ 16:00, February 23rd(Tue), 2010

場所: 研究交流棟5階会議室 W524  
*Venue:* Cooperation Center, 5F Meeting Room, W524

題目: **Dynamics of laser ablation/desorption  
and structure formation**  
*Title:*

講師: **Professor Juergen Reif**  
*Speaker:* Chair of Experimental Physics/Materials Science  
Brandenburgische Technische Universitaet Cottbus and Cottbus JointLab,  
Cottbus, Germany

要旨: *Abstract:* The impact of intense ultra-short laser pulses (duration about 100 femtoseconds) on the surface of a solid target (dielectrics, silicon) allows to study the dynamics of laser ablation resp. desorption (below the ablation threshold): because of the short interaction time it becomes possible to separate the processes of energy input, energy dissipation, and material response. It will be shown that the laser input results in a massive perturbation of the target electronic system which in turn transiently modifies the crystalline order in and even outside the irradiated region, establishing a state of dynamic instability. Eventually, this disorder will lead to a local decomposition which is the onset of ablation, resulting in a further increase of the instability. The subsequent relaxation can result in the formation of new morphologies (ripples) at the target surface which do not at all depend on the target crystal structure. It will be shown that the transient perturbation/modification of the electronic system can last for a considerable time of up to seconds, longer than the structural relaxation time.