

# エクストリームフォトンクスセミナー *Extreme Photonics Seminar*

日時: 平成21年 10月 21日(水)  
15:00 ~ 17:00, October 21st(Wed), 2009

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

題目: **Research on laser-driven plasma electron acceleration  
for all-optical ultrashort X-ray source**

“全光学型超短パルスX線源を目指したレーザープラズマ電子加速研究”

講師: 三浦 永祐 氏 (産総研 エネルギー技術研究部門)  
Dr. Eisuke MIURA (Power laser group, Energy Technology Research Institute, AIST)

**要旨:** Laser driven-plasma acceleration, which is charged particle acceleration via the interaction of an intense laser pulse with a plasma, enables a compact electron accelerator by using the extremely high accelerating field a thousand times higher than that of conventional radio-frequency accelerators. Furthermore, the electron pulse duration is extremely short, of the order of femtosecond. This set of unique characteristics enables a novel, compact, all-optical, ultrashort X-ray source based on such as laser Compton scattering scheme. To develop an all-optical ultrashort X-ray source, the research on the laser electron acceleration has been conducted at the AIST. The present status mainly concerned with the generation of quasi-monoenergetic electron beams and prospect for an all-optical ultrashort X-ray source are presented.

題目: **Towards nonlinear optical spectroscopy in a nano-scaled volume**

講師: 古澤 健太郎 氏 (理研 河田ナノフォトンクス研究室)  
Dr. Kentaro FURUSAWA, Nanophotonics Laboratory, RIKEN ASI

**要旨:** Visualization is a fundamental issue to extract the information from a localized volume in nanotechnology. NSOM (near-field scanning optical microscopy), where nonlinear optical spectroscopy may be combined with a scanning probe microscope (SPM), potentially offers a unique opportunity for imaging nano-scaled surfaces with color even in a temporally resolved manner. However, its general applicability is still limited. In this talk, we discuss the current limitations by reviewing our recent work. We also review our continuous effort on improving our SPM technology to make it compatible with an intense broadband laser source.