エクストリームフォトニクスセミナー

Extreme Photonics Seminar

No.17

Language: **Japanese**

Date: Feb. 3rd(Thu), 2010, 15:00 〜 17:00

Location: Cooperation Center, 5F Meeting Room, W524

(研究交流棟5階会議室 W524)

Title: Synthesis and Optical characterization of Nano-Structured ZnO Crystals by Pulsed Laser Deposition

Speaker: **中村 大輔 氏 (九州大学)**

Prof. Daisuke Nakamura (Kyushu Univ.)

ZnO crystals have attracted a great attention as building blocks for next generation nanodevices, such as ultraviolet (UV) laser diodes and UV light emitting diodes, because those have a superior crystalline quality, a better electrical/optical quality, and a large surface area to volume ratio. We have been succeeded in growing nano-structured ZnO crystals by nanoparticle-assisted pulsed-laser deposition (NAPLD) without using any catalyst. Vertically- and horizontally-aligned ZnO nanowires have been successfully grown on the annealed c-plane and a-plane sapphire substrates, respectively. Furthermore, layer-structured ZnO nanowires, such as a core/shell structure, were fabricated by NAPLD using a multi-target changer system. In this presentation, recent progresses of synthesis and optical characterization of the nano-structured ZnO crystals by the NAPLD will be discussed.

Title: Development of the full-field imaging soft x-ray microscope for bio-imaging

Speaker: **大東 琢治 氏 (立命館大学)**

Dr. Takuji Ohigashi (Ritsumeikan Uni.)

The full-field imaging soft x-ray microscope has been constructed at the SR center (575 MeV, 300 mA) of Ritsumeikan University. The major features of this system are high penetrating power, 3-dimensional observation by performing the computed tomography, the high spatial resolution of ~70 nm, and the variable wavelength from 1.73 to 4.73 nm. Especially, the wavelength region called “water window” (2.3~4.4 nm) has potential to obtain good contrast between the water and the carbonic materials without any staining. Therefore, observation of the living biological samples, such as cells in the water, with high resolution is the most remarkable advantage for the soft x-ray microscopy. This is also expanded to 3-dimensional observation without any destructive process. Then, the radiation of the x-ray to the biological sample causes the structural damage. The cryo-cooling system and the equipments for holding the sample have been developed for reducing the damage. In this report, the improvements of the system for the bio-imaging and some application studies are shown and the concept of using the ”carbon window” as the new strategy is also shown.

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