



47th RAP Seminar

The 47th Seminar on RIKEN Center for Advanced Photonics

Language: Japanese

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Location: **W319, 3F, Cooperation Center, Wako Campus, RIKEN**

(理研 和光キャンパス 研究交流棟 3階会議室 W319)

Title: **Nanofocusing mirror for soft x-rays**

軟X線のためのナノ集光ミラー

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In soft x-ray focusing, grazing incidence mirrors have advantages of no chromatic aberration and high focusing efficiency, compared with zone plates and multilayer mirrors. Although the grazing incidence mirror for nanofocusing have been developed in hard x-ray regions, there is no same-type mirror with the high performance in soft x-ray regions. To design the nanofocusing optical system at an x-ray energy less than 1keV, the numerical aperture in 0.1 order is necessary. This leads to difficulty in fabricating the precise mirror. In this presentation, I will talk about a fabrication process of ellipsoidal mirrors, which consists of mandrel fabrication using a deterministic figure correction method and replication using Ni electroforming. Focusing performances of the fabricated ellipsoidal mirrors were evaluated using high order harmonics, synchrotron radiated soft x-rays, and soft x-ray free electron lasers. The focusing tests indicate that the proposed fabrication system is a promising process for fabricating rotationally symmetric mirrors including Wolter mirror.