

(초청강연)

# **<sup>1</sup>Highly-crystalline sp<sup>3</sup>-bonded 5H-BN prepared by plasma-packets assisted pulsed-laser deposition: a room-temperature UV light-emitter at 225nm**

**Shojiro Komatsu**

*Advanced Materials laboratory, National Institute for Materials Science*

Highly crystalline 5H-polytypic form of sp<sup>3</sup>-bonded boron nitride (BN) was grown by pulsed-laser-vaporization of BN, where synchronous reactive-plasma packets assisted the crystal growth in the vapor phase. The structure of the product crystallites ( ~ 5 micrometers) was confirmed by using transmission electron diffraction and electron energy loss spectroscopy. This material proved to have a sharp and dominant band at 225 nm by cathode luminescence at room temperatures and corresponding monochromatic images revealed that they uniformly emitted the ultraviolet light. Considering that cubic BN has already been doped as p- and n-type semiconductors, this material may be applied to the light-emitting devices working at almost the deepest limit of the UV region that is functional without vacuum.