

## **Virtual Hard X-Ray Collaboration Seminar Series**

**Date:** Thursday 12 May 2022

**Title:** Self-seeded X-ray FEL and its applications at PAL-XFEL

**Speaker:** Dr. Inhyuk Nam, PAL-XFEL

### **Abstract:**

We produced almost fully coherent hard X-ray self-seeded (HXRSS) free-electron laser (FEL) pulses with an unprecedented peak-brightness and a narrow spectrum using the forward Bragg-diffraction (FBD) monochromator at PAL-XFEL. We achieved outstanding performance of HXRSS FEL over photon energy range covering from 3.5keV to 14.6keV. The averaged energy of seeded FEL is operating with the energy over 1 mJ/pulse from 5 keV to 10 keV. In addition, we developed x-ray energy scanning spectroscopy with the help of double crystal monochromator (DCM) which results in improved spectral impurity and fully calibrated energy scale. We have carried out test experiments such as resonant inelastic X-ray scattering (RIXS) and X-ray emission spectroscopy (XES), femtosecond time resolved X-ray absorption near edge structure (TR-XANES), and serial femtosecond crystallography (SFX). In this talk, I will present recent experimental results by using energy scanning of hard X-ray self-seeded FEL at PAL-XFEL.