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## Development of a white X-ray beam monitor for the undulator beamline at Korea-4GSR

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Korea-4GSR, a 4th generation synchrotron radiation facility under construction in Ochang, South Korea, will install ten beamlines in Phase-1, nine of which will use undulators as light sources. The central cone entering each beamline's optics has a beam size about 1/10 that of the full white beam, requiring precise shaping and diagnostics at the front-end. The white beam from IVU24(In-Vacuum Undulator) reaches up to 18 kW power with a peak power density of 165 kW/mrad<sup>2</sup>. Such high thermal loads can cause damage or vacuum failure with slight misalignments. Therefore, diagnostics must endure this load and provide accurate measurements. The diagnostic system must offer sub-100  $\mu\text{m}$  resolution to detect beam size and position, while also managing heat. For this, scCVD(single crystalline Chemical Vapor Deposition) diamond is used to detect current signals and X-ray fluorescence, supported by a low-conductive water cooling channel. This presentation introduces the white beam monitoring system for Korea-4GSR undulator beamlines, including mechanical design, cooling system, and thermal analysis.

### Footnotes

### Funding Agency

**Author:** Mr CHOI, Hyung-seok (Pohang Accelerator Laboratory)

**Co-authors:** KIM, Jehan (Pohang Accelerator Laboratory); Mr PARK, Jongha (Pohang Accelerator Laboratory); KIM, Ki-jeong (Pohang Accelerator Laboratory); KIM, Sungnam (Pohang Accelerator Laboratory); YUN, Young Duck (Pohang Accelerator Laboratory)

**Presenter:** Mr CHOI, Hyung-seok (Pohang Accelerator Laboratory)

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