Contribution ID: **105** Contribution code: **TUP105-MOB** Type: **Student Poster Presentation**

High-resolution synchrotron radiation topography characterization of diamond monochromator for hard X-ray free electron laser

Tuesday 20 August 2024 17:40 (20 minutes)

In this paper, the results of high-resolution X-ray topography characterization of monocrystal diamond plate with (100) crystal surface orientation used as high-quality monochromator of high-heat-load free electron lasers are reported. The monocrystal diamond plate was grown using high-pressure high-temperature method and fabricated by laser-cutting. The intrinsic crystal quality of the diamond surface was studied using sequential X-ray diffraction method of synchrotron radiation in weak-dispersive and non-dispersive configuration and the rocking-curve topography of the lattice was obtained. The variations of the rocking-curve width and peak position measured with 7.4 μm spatial resolution and ˜10-7 energy resolution over a 0.5 mm×0.5 mm selected region was found to be less than 0.5 μrad, which was suitable for applications in wavefront-preserving high-heat-load crystal optics.

Footnotes

Funding Agency

Primary author: LIU, Yixuan (Shanghai Institute of Applied Physics)

Co-authors: WANG, Dong (Shanghai Advanced Research Institute); ZHANG, Haipeng (Shanghai Advanced Research Institute); SHANGYU, Si (Shanghai Advanced Research Institute); LIU, Tao (Shanghai Advanced Research Institute); LI, Zhongliang (Shanghai Institute of Applied Physics)

Presenter: LIU, Yixuan (Shanghai Institute of Applied Physics)

Session Classification: Poster session

Track Classification: FEL theory