



Contribution ID: 5 Contribution code: TUO09

Type: Contributed Oral Presentation

## Recent advances in X-ray microscopy instrumentation developments at NSLS-II

*Tuesday 16 September 2025 16:20 (20 minutes)*

X-ray microscopy is a mature characterization tool routinely used to investigate diverse material questions of science, technology, and engineering. The high penetration power of X-rays allows the utilization of different characterization methods and reveals elemental composition, crystalline phases, strain distribution, oxidation states, etc. in macroscopic and microscopic samples. Full-field and scanning X-ray microscopes serve similar scientific purposes but provide technical capabilities that complement each other. In recent years, a number of X-ray microscopy systems have been designed, constructed, and commissioned at NSLS-II. During the presentation, we will provide a technical overview of recently designed microscopy instruments. It will include the design details of the Multilayer Laue Lens-based nanoprobe optimized for ~10 nm spatial resolution imaging, its current status, and future upgrades\*,\*\* ; the zoneplate-based full-field imaging system capable of 1-minute nano-tomography measurements\* \*\* ; and a new Kirkpatrick-Baez based scanning microscope designed for ~200 nm spatial resolution experiments \* \* \*\*.

### Footnotes

- \* E. Nazaretski et al., Journal of Synchrotron Radiation, 24, 1113 (2017)
- \*\* W. Xu et al., Rev. Sci. Instr., 95, 113705 (2024)
- \* \* \* D. S. Coburn et al., Rev. Sci. Instr., 90, 53701 (2019)
- \* \* \* \* E. Nazaretski et al., Rev. Sci. Instr., 29, 1284 (2022)

### Funding Agency

**Author:** NAZARETSKI, Evgeny (Brookhaven National Laboratory)

**Co-authors:** XU, Weihe (Brookhaven National Laboratory); COBURN, David (Brookhaven National Laboratory); YAN, Hanfei (Brookhaven National Laboratory); GAO, Zirui (Brookhaven National Laboratory); HUANG, Xiaojing (Brookhaven National Laboratory); XU, Wei (Brookhaven National Laboratory); BOUET, Nathalie (Brookhaven National Laboratory); ZHOU, Juan (Brookhaven National Laboratory); GE, Mingyuan (Brookhaven National Laboratory); LEE, Wah-keat (Brookhaven National Laboratory); YANG, Yang (Brookhaven National Laboratory); KISS, Andrew (Brookhaven National Laboratory); CHU, Yong (Brookhaven National Laboratory)

**Presenter:** NAZARETSKI, Evgeny (Brookhaven National Laboratory)

**Session Classification:** Beamlines Session 2

**Track Classification:** BEAMLINES: End Stations