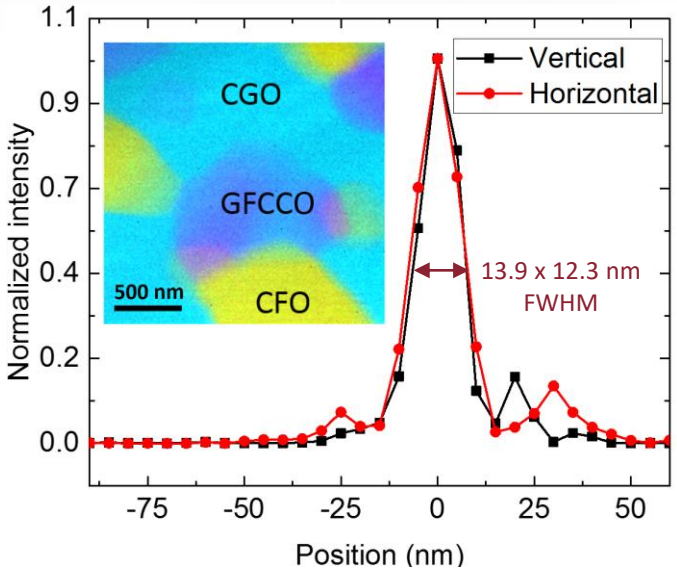
Ultra-high Spatial Resolution Meets Multimodal Imaging



Using a nano-focused x-ray beam, researchers were able to image an emergent phase of an ionic membrane (inset). This incredibly small x-ray beam was created by specially designed multi-layer Laue lenses (MLLs) that were manufactured at Brookhaven Lab.

H. Yan, N. Bouet, J. Zhou, X. Huang, E. Nazaretski, W. Xu, A. Cocco, W. Chiu, K. Brinkman, Y. Chu, *Nano Future 2*, 011001, (2018).

Work was performed at Brookhaven National Laboratory

Scientific Achievement

Scientists achieved multimodal imaging with a ultra-high resolution (~12 nm) and will use it to study novel and complex materials in detail.

Significance and Impact

This significant advance in the development is a milestone for hard x-ray microscopy that illustrate the potential for applied materials science and related fields.

Research Details

- Scientists used multilayer Laue lenses to achieve a focused beam size of 13.9x12.3 nm^2.
- Simultaneous absorption contrast, phase contrast, and fluorescence images were obtained with this resolution.
- An ionic membrane was investigated, revealing the existence of an emergent material phase.