

Abstract Submitted
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Full-Field Microscopy with Synchrotron Radiation CHRISTOPH RAU, Advanced Photon Source, ANL, 9700 S. Cass Avenue Argonne, IL 60439, VASILICA CRECEA, University of Illinois at Urbana-Champaign, 104 S. Goodwin Ave., Urbana, IL 61801, WENJUN LIU, Advanced Photon Source, ANL, 9700 S. Cass Avenue Argonne, IL 60439, IAN ROBINSON, Department of Physics and Astronomy, University College, London WC1E 6BT, UK., KEVIN PETERSON TEAM, PETE JEMIAN TEAM, GERD SCHNEIDER COLLABORATION, XINDI YU COLLABORATION, PAUL BRAUN COLLABORATION — A full-field X-ray microscope has been built at the UNICAT-beamline 34 ID-C at the Advanced Photon Source (APS), working with a Kirkpatrick-Baez mirror (KB) as condenser and a micro-Fresnel-zone plate (FZP) as objective lens. 50 nm-features have been resolved in a Nickel structure operating the microscope at a photon energy of 9keV. The KB system used as a condenser focuses approximately 63% of the incoming intensity onto the sample spot, matching the aperture of the objective lens. For the latter we have a choice of gold micro-FZP having outer zone widths from 40 to 70 nm. Under these conditions the X-ray microscope provides 50-85 nm resolution and short exposure times due to the high efficiency of the KB-system. A field of view of 20x40 micron² can be imaged within a minute by scanning the condenser optic. First tomography experiments have been performed. We will also discuss other techniques such as cone and in-line phase contrast imaging.

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