

Abstract Submitted  
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**Image-based Nanocrystallography in Two and Three Dimensions with Database Support** PETER MOECK<sup>1</sup>, BJOERN SEIPEL<sup>2</sup>, RUBEN BJORGE, Portland State University, PHIL FRAUNDORF, University of Missouri at St. Louis, NANOCRYSTALLOGRAPHY GROUP TEAM, PHIL'S GROUP TEAM — High-resolution transmission electron microscopy (HRTEM) and atomic resolution scanning TEM (STEM), when combined with tools for image-based nanocrystallography possess the capacity to derive the crystallographic phase and shape of nanocrystals. This paper introduces two such tools: lattice fringe fingerprinting in two dimensions (2D) for the identification of unknown nanocrystal phases and tilt protocol applications in three dimensions (3D) for the determination of the shape of nanocrystals. Both the Nano-Crystallography Database (NCD, <http://nanocrystallography.research.pdx.edu>) and the Crystallography Open Database (COD, <http://crystallography.net>) are discussed because the whole fingerprinting concept is only viable if there are comprehensive databases to support the identification of an unknown nanocrystal phase.

<sup>1</sup>Oregon Nanoscience and Microtechnologies Institute, <http://www.onami.us>

<sup>2</sup>Oregon Nanoscience and Microtechnologies Institute, <http://www.onami.us>

Peter Moeck  
Portland State University

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