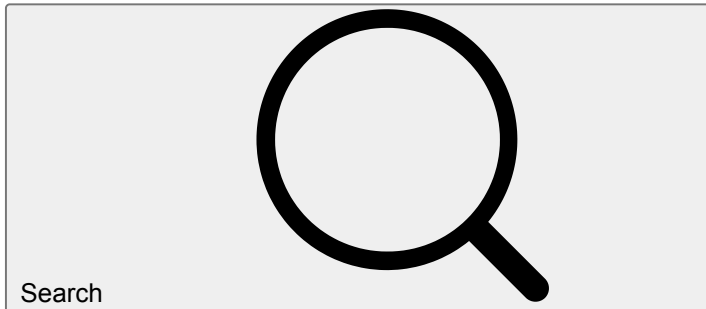


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Micro Grain Analysis in Plastically Deformed Silicon by 2nd-Order X-Ray Diffraction

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Abstract

Second-order diffraction (SOD) of x-rays refers to all diffraction processes where the photons reaching the detector have been diffracted twice within a crystal lattice. By measuring the two dimensional intensity profile of SOD, it is possible to distinguishing rescattering processes taking place inside each grain (perfect crystal domain) or in between grains. These two SOD regimes, usually called dynamical and kinematical, respectively, are ruled by size and relative orientation of the grains. In this work, we demonstrate how to explore SOD phenomena to understand the micro scale grain structure in plastically deformed silicon single crystal.

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