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Probing Transient Structures of Nanoparticles by Single-Particle X-Ray Diffraction

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We report on our recent experimental results of single-shot and single-particle X-ray diffraction of nanoparticles at SACLA. The single-shot diffraction data provided insights into the crystallization kinetics of Xe nanoparticles, where the nanoparticles initially crystallize in the metastable stacking-disordered phase and then transform into the stable fcc phase. In addition, we investigated the ultrafast structural dynamics of nanoparticles triggered by the irradiation of an intense laser pulse.

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