

Abstract Submitted
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Time-resolved electron diffraction measurement of laser-induced solid-solid transition of $La_{1-x}Sr_xMnO_3$ HYUK PARK, SHOUHUA NIE, XUAN WANG, RICK CLINITE, JIM CAO, Florida State University — For a limited range of compositions (x), $La_{1-x}Sr_xMnO_3$ is known to undergo a reversible solid-solid structural phase transition from an orthorhombic to a rhombohedral with increasing temperature or external magnetic field. The direct and real time monitoring of this structural change provides a unique mean to uncover the transition mechanism and pathways. By initiating this structural change with fs optical excitations, the timescale and structural kinetics were directly monitored with femtosecond electron diffraction. The transition time was found to be several hundred ps, depending on the doping level. Based on our observations on the temporal evolutions of the diffraction pattern, including the Bragg peak position, width and intensity, the transition is most likely thermal driven.

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