

Abstract Submitted
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A photo-induced metastable phase in monoclinic V₂O₃.¹ ANDREJ SINGER, University of California San Diego, JUAN GABRIEL RAMIREZ, Universidad de los Andes, Bogot, Colombia, ILYA VALMIANSKI, IVAN K. SCHULLER, OLEG G. SHPYRKO, University of California San Diego — The out of equilibrium pathways recently emerged as a novel paradigm in controlling the order parameters in strongly correlated electron systems. The complex interplay among various degrees of freedom, the hierarchy of the characteristic time scales, and the possibility to dynamically control the nanoscale disorder allows accessing hidden, metastable phases or enhancing the order parameter. Here we couple time-resolved x-ray diffraction experiments with high-resolution nanoscale x-ray imaging to study the properties of the photo-excited structural phase transition (SPT) in the classical material V₂O₃. We directly observe a non-equilibrium pathway arising during a photo-excited SPT, which is absent in equilibrium measurements. The experiments were conducted at the x-ray free-electron laser LCLS and the synchrotron source APS.

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