

Abstract Submitted
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Pressure Induced Structural Phase Transitions in SrTiO₃ Nanoparticles HAN ZHANG, SIZHAN LIU, New Jersey Institute of Technology, MEGAN SCOFIELD, STANISLAUS WONG, State University of New York at Stony Brook, XINGUO HONG, High Pressure Science and Technology Advanced Research, VITALI PRAKAPENKA, ERAN GREENBERG, Center for Advanced Radiation Sources, University of Chicago, TREVOR TYSON, New Jersey Institute of Technology — Bulk SrTiO₃ (STO) is paraelectric and exhibits a structural phase transition at a pressure, $P \sim 6$ GPa, at room temperature. However nanoscale STO is not well explored. Pressure dependent structural measurements on monodispersed nanoscale SrTiO₃ samples with average diameters of 10 to ~ 80 nm were conducted to enhance the understanding of the structural phase diagram of nanoscale SrTiO₃. A robust pressure independent polar structure was detected in the 10 nm sample for pressures up to 13 GPa while a size dependent cubic to tetragonal transition occurs (at $P = P_c$) for larger particle sizes. This work is supported by DOE Grant. DE-FG02-07ER46402.

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