Abstract Submitted
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Time Dependent Surface Morphology During Pulsed Laser Deposition of $SrTiO_3$[1] J.Z. TISCHLER, B.C. LARSON, GYULA ERES, C.M. ROULEAU, Oak Ridge National Laboratory, P. ZSCHACK, UNICAT-UIUC — The time evolution of the $SrTiO_3$ surface morphology has been studied using time-resolved surface x-ray diffraction during pulsed laser deposition. Measurements made at the $(00\frac{1}{2})$ anti-Bragg position on the crystal truncation rod (CTR) show the intensity oscillations associated with layer by layer growth, and the high count rate available provides information on surface kinetics at the sub-millisecond time scale. Diffuse scattering from the islands measured around the CTR oscillates out of phase with the intensity on the rod demonstrating the growth and filling in of islands through the layer by layer growth cycle. Measurements of the diffuse intensity peak position, which provide a measure of the island size, show the island size varying with both coverage and substrate temperature. The variation of island size with substrate temperature will be discussed in relation to surface mobility and the short and long time evolution of surface morphology.

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