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Beating Effects on X-ray Reflectivity for Pulsed Laser Deposition of TiN YEN-RU LEE, Dep. of Physics, University of Illinois at Urbana-Champaign, AARON GRAY, Dep. of Physics, University of Illinois at Urbana-Champaign, PETER CZOSCHKE, JON TISCHLER, Solid State Division, Oak Ridge National Laboratory, HAWOONG HONG, Frederick-Seitz Material Research Laboratory, University of Illinois at Urbana-Champaign, TAI-CHANG CHIANG, Dep. of Physics, University of Illinois at Urbana-Champaign — We grew TiN on sapphire (0001) substrates by pulsed laser deposition (PLD). The growth was monitored, in situ, in real time by x-ray diffraction at the $(0, 0, \frac{1}{2})$ anti-Bragg position using a synchrotron beam. The experiment was carried out at the UNICAT undulator beamline at the Advanced Photon Source. The measured x-ray intensity shows atomic-layer-resolved oscillations superimposed on a beating pattern with changing wavelength. Numerical modeling shows that the results can be well described in terms of an evolving island height distribution. Implications in regard to film structure and morphology will be discussed.

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