

Abstract Submitted  
for the MAR09 Meeting of  
The American Physical Society

**Nanometer/Nanosecond Resolved Domain Dynamics Allowing Mapping of Distinct Nucleation and Growth Activation Energies** BRYAN HUEY, NICHOLAS POLOMOFF, VINCENT PALUMBO, JAMES BOSSE, University of Connecticut, Institute of Materials Science — A high speed variation of AFM is employed to uniquely monitor ferroelectric domain dynamics. Through pump/probe schemes, 20 nanometer resolution and 10 nanosecond temporal resolution is maintained. Consecutive images during switching therefore provide maps of nucleation times, while domain wall growth velocities as high as 25 m/s are observed. By imaging a specific region repeatedly with several pulse amplitudes, activation energies can also be extracted as a function of position, revealing completely independent energies for nucleation and growth that are sample dependent.

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Date submitted: 21 Nov 2008

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