



Apr 18th, 9:00 AM - 10:30 AM

Scanning Probe Microscopy Applications of Ferroelectric Materials

W. L. Murphy
Illinois Wesleyan University

G. C. Spalding, Faculty Advisor
Illinois Wesleyan University

Follow this and additional works at: <https://digitalcommons.iwu.edu/jwprc>

Murphy, W. L. and Spalding, Faculty Advisor, G. C., "Scanning Probe Microscopy Applications of Ferroelectric Materials" (1998). *John Wesley Powell Student Research Conference*. 17.

<https://digitalcommons.iwu.edu/jwprc/1998/posters/17>

This is protected by copyright and/or related rights. It has been brought to you by Digital Commons @ IWU with permission from the rights-holder(s). You are free to use this material in any way that is permitted by the copyright and related rights legislation that applies to your use. For other uses you need to obtain permission from the rights-holder(s) directly, unless additional rights are indicated by a Creative Commons license in the record and/ or on the work itself. This material has been accepted for inclusion by faculty at Illinois Wesleyan University. For more information, please contact digitalcommons@iwu.edu.

©Copyright is owned by the author of this document.

Poster Presentation 17

SCANNING PROBE MICROSCOPY APPLICATIONS OF
FERROELECTRIC MATERIALS

W.L. Murphy and G.C. Spalding*
Department of Physics, Illinois Wesleyan University

Ferroelectric materials have recently gotten a great deal of attention due to their use as capacitors for integration into non-volatile ferroelectric random access memories (RAMs), and as high dielectric layers in compact capacitors for manufacturing planar dynamic RAMs. The superior piezoelectric property of ferroelectric ceramics also makes them ideal materials for microelectromechanical systems (MEMS). The strong piezoelectric effect allows electromechanical sensing and actuation. Thin films of Ferroelectric materials have been successfully used in a variety of MEMS applications, however, their advantageous properties of have not been fully utilized in scanning probe microscopy (SPM) applications. Furthermore, thin films have been used rather than single crystals due to the difficulty in micromachining single crystal ferroelectric samples. We present some creative device applications of single crystal ferroelectric materials in the context of SPM.