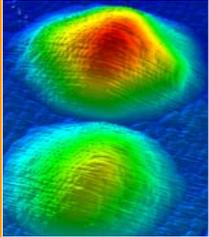


EPSCoR

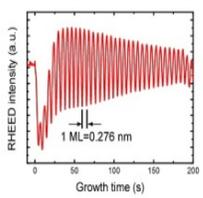
Experimental
Program to
Stimulate
Competitive
Research



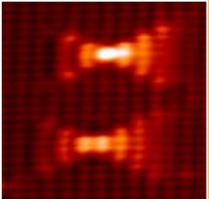
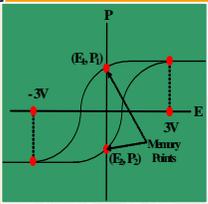
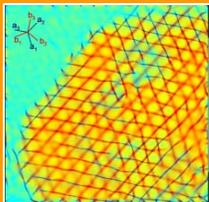
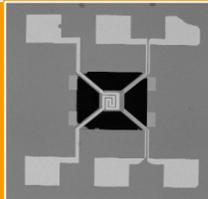
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Workshop to Develop an EPSCoR Consortium



“That will lead the Nation
on the Underlying Science
and Engineering of Nano
Ferroelectric and
Multiferroic Materials and
Devices”

August 18-19, 2008
at the University of Arkansas
Fayetteville, Arkansas 72701



WORKSHOP PLAN

Many exciting opportunities exist today for novel materials that exhibit behavior that is superior or unique compared to those currently available. Imagine electrical, optical, and mechanical behavior that could enable new and exciting products. Smaller, stronger, lighter, faster materials that are creatively used to innovate the next generation of high technology. This opportunity is based on developing ferroelectric superlattices and multiferroic nanostructures that are computationally designed in advance to have a desired behavior before they are fabricated and tested for agreement with the predicted behavior. There is currently no such innovative materials effort in the U.S. *The talent and infrastructure necessary to build an innovative research consortium, however, does exist today among the EPSCoR states.* For example, the University of Arkansas, West Virginia University, Oklahoma State University, Tulane University, the University of Puerto Rico, Montana State University, University of Nebraska, and perhaps other EPSCoR universities, have the unique talents needed to lead the nation in establishing a National Consortium for Nanoferroelectric and Multiferroic Materials and Devices. Together with Oak Ridge National Laboratory, the Army Research Lab, and industrial partners, a team among the EPSCoR states can open a new era in materials innovation. The objective of this workshop is to take advantage of this exciting materials opportunity and unique EPSCoR expertise, to bring together leading researchers from the EPSCoR states in a workshop targeted toward this vision.

WORKSHOP DESCRIPTION

The workshop is open to interested faculty and students from all EPSCoR states capable of contributing to this vision. The workshop will provide travel support for as many as 40 faculty or students.

Format: The workshop is structured into 5 parts:

- 1. Unique modeling approaches to design nanoferroelectric superlattices, multiferroics, and nanoscale dots;**
- 2. The capability to fabricate and understand ferroelectric materials that can form nanoscale structures;**
- 3. The ability to spatially, electrically and optically characterize new ferroelectric superlattices and nanoscale dots;**

- 4. Device fabrication and packaging of these components as miniaturized devices.**
- 5. Building a consortium to lead the nation on the science and engineering of nano ferroelectric/multiferroic materials/devices**

Each part of the workshop will be “chaired” by a senior EPSCoR researcher while each participant will give a 10 minute discussion, limited to five slides, of their relevant research effort. The chair will also act as the facilitator focused to ensure that the end result will be a series of recommendations that will provide guidance to the entire group for the later discussion in part 5 on a strategy to form a consortium.

OUTCOME OF THE WORKSHOP

The “product” resulting from the proposed workshop shall be a document that provides: (1) a first step to organize a proposal to EPSCoR to support the formation of a consortium and (2) strategy to have the consortium compete for a Center of national significance.

During the workshop we must (1) distinguish our efforts from that of others and (2) make a compelling case that a national cohesive effort in nanoferroelectric and multiferroic materials and devices makes good sense in today's political and economic environment. This will require us to (3) express the potential *technology* impact of our Center. For example, if our Center was focused on the basic research on cancer we could easily express this with the potential of targeted drug delivery or early detection schemes. We also have (4) to decide on an estimated budget and (5) be clear about our research, education, and innovation focus. Obviously, there is a lot to do in the short time of the workshop so that it becomes important to have a well planned visit. We will initiate e-mail discussions before the workshop.

To join this Workshop Contact

**Gregory J. Salamo, Workshop Chair,
at the University of Arkansas,
salamo@uark.edu or 479-871-2234**