

Indiana State University

Chemistry and Physics Department

Presents



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**Professor of Physics at the
University of Illinois at Urbana Champaign**

“New Phenomena from Interfaces in Oxides”

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New Phenomena from Interfaces in Oxides

Oxides exhibit all sorts of physical phenomena in crystals with similar structure. Advances in chemical synthesis allow near-perfect interfaces between different oxides to be made in a programmed manner. In particular, atomic layer by layer molecular beam epitaxy allows thin films to be made in which the composition of each atomic-oxide layer can be independently chosen. This talk will review what happens when this is done and what sorts of new behavior arise because of this. Samples with many such interfaces exhibit “aggregate” physical behavior controlled by the sequenced growth chemistry. Each layer influences its neighbors and what comes out in aggregate behavior is different from the properties each layer had by itself. We’ll look at how the chemistry works, what can be done to control the chemical kinetics and what you get in the end.