

T_CSUH Bi-Weekly Seminar

Texas Center for Superconductivity at the University of Houston

Genunu Gunaratne

Department of Physics and T_CSUH
at the University of Houston



Nanoscale Self-Assembly: A Theoretical Analysis

Friday, November 10, 2006

Room 102, University of Houston Science Center
12:00 noon – 1:00 p.m.

Abstract

We use linear and nonlinear stability analysis on a paradigmatic model to extract general characteristics of nano-scale self-assembly. In particular, we identify the order of occurrence of hexagonal and striped arrays, and show that square arrays cannot form when the elastic forces between the substrate and the monolayer are isotropic. In addition, we introduce a method that can be used to estimate hard-to-extract material properties of the monolayer using characteristics of the self-assembled patterns. Finally, we will discuss a technique that can be used to help generate patterns with long-range order.

Bio

Gemunu H. Gunaratne is a Professor of Physics and Associate Chairman of the Department of Physics. He conducts theoretical and computational research in problems related to Nonlinear Physics. He received his Ph.D. from Cornell University and conducted post-doctoral studies at the University of Chicago before moving to the University of Houston in 1990. His current research includes modeling of bones in order to identify reliable diagnostics for osteoporosis, studies of stochastic properties of financial markets, and theoretical analysis of models of nano-scale self assembly.

Persons with disabilities who require special accommodations in attending this lecture should call (713) 743-8210 as soon as possible.



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