

Seminar to be presented:

March 30, 2001 at the University of Louisville Physics Department and

April 6, 2001 at the Vanderbilt University Department of Physics and Astronomy

## **The Dynamic World of Surface Nanostructures**

The building blocks of modern technology show a steady trend toward smaller length scales. These length scales are now moving into the nanometer regime where material properties can no longer simply be scaled down. New properties, which can be seen either as advantages or problems, appear at these length scales and are a challenge to our understanding. To meet these challenges, the properties of materials must now be studied at the atomic level.

A significant part of this nanoscale world involves nanostructures on surfaces such as that to be found in magnetic recording media. As the size of these nanostructures shrinks to less than a thousand atoms, a paramount issue becomes their long-term stability. In this talk I will focus on the stability of nanostructures which can be formed using molecular beam epitaxy. Emphasis will be placed on the mass transport mechanisms that lead to instabilities in the nanostructures after the completion of the growth process.

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