

Physics Colloquium Series

~ Physics Seminar Student Talks ~

“Thermophoresis, Adhesion, and a New Kind of Particular Matter Assessment”

Airborne particles are closely related to our health and environment. Scientific knowledge of the properties of these particles will be required to study and control airborne particles. Scientists found that the most important aspect in understanding the properties of Particulate Matter (PM) is to understand their mass concentration and size distribution. At this talk, we will look at some properties of the airborne aerosol particle. Amongst vast available information, we will focus on some physical forces in dealing with airborne particles, and its application in PM measurement. At Lawrence Berkeley National Laboratory, a PM assessment system is being developed to study the mass and size properties of Environmental Tobacco Smoke (ETS), an ubiquitously encountered PM that is closely related to diseases like asthma and lung cancer. This new technology consists of three electronically heated thermophoretic wires and two aluminum collector plates on the opposite sides of the wires. These aluminum plates then are being optically analyzed, and studied.

Zhuo Huang

“Stairway to the Stars: A Critical Assessment of the Space Elevator Concept”

There has been a lot of recent controversy regarding the concept of a Space elevator and whether such a device would function or not. This presentation will be about the possibilities and difficulties of implementing a real-life space elevator. Considerations by private companies such as Liftport and even very respectable space agencies such as NASA support Space Elevator research, and this provides a hopeful future for the Space Elevator. There are, however, many difficulties that could arise that would render a space elevator inefficient and uneconomical.

Curtis Castrapel

“Fuel Cells: A Drop in the Bucket”

For more than 200 years scientists have known of the vast energy potential locked in the simplest of molecular structures; H_2 . This presentation will explore the prospect of the fuel cell as a top contender for a long term solution to the world's energy needs. I will present a brief history of the science involved, review the proton exchange process, discuss the pros and cons of several popular exchange membrane types, and focus on regenerative fuel cells. There will be a demonstration of hydrogen fuel generation and the operation of a motorized vehicle operated solely on the produced fuel.

David Stafford

Thursday, December 10, 2005

4:00-5:20 PM MND 1015

OPEN & FREE TO ALL STUDENTS & FACULTY