Physics Seminar

Monday 11/9/2009, 4:30 pm Science & Engineering Building Auditorium

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Living in a Material World

As part of an undergraduate education, college students are traditionally exposed only to courses within their home departments. This contrasts with industry in which teams of scientists and engineers with varying backgrounds are assigned to a project or product team. Too often the first professional job is also the first time new graduates are required to work within a team that capitalizes upon the complementary strengths of various backgrounds. This gap in interdisciplinary experiences can be addressed universities where interdisciplinary teaming This can happen formally within encouraged. established centers formed by collaboration between departments or this can happen informally within groups of faculty members with common research goals.



The field of materials science and engineering is a perfect example of the interdisciplinary nature of a fundamental aspect of our daily lives. Everything we encounter is made from something. How these high tech materials are developed, synthesized, and used in design relies on merging science and engineering. This interdisciplinary background is needed to understand how a material "behaves" in response to external stimuli such as temperature and loads. An example of applying materials science and engineering to a revolutionary new fabrication technique will be discussed. By drawing upon different disciplines to produce predictive material behavior models, a reduction in development time and costs can be achieved. Scaling up behavior and interactions from the atomic level by considering the physics and chemistry of the structure is needed to produce these predictive models of material behavior.