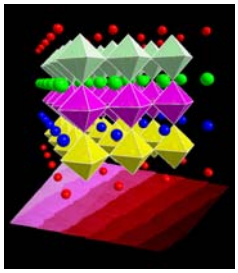
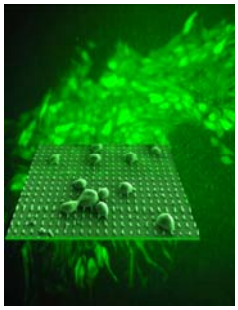
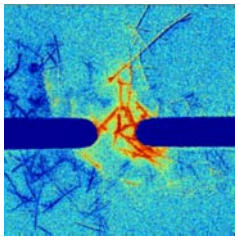
CNMS DISCOVERY SEMINAR SERIES

Thursday, January 20, 2011
4:00 pm
Iran Thomas Auditorium, 8600







High performance organic and inorganic thin film solar cell via solution process

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Abstract:

Electricity is critical to the functioning of our modern society, and currently most of our electricity comes from non-renewable sources, such as fossil fuels, coal, and natural gas. On the other hand, the cost of current solar cell generated electricity is still about three to four times higher than these traditional methods. In order to make solar energy mainstream and widely commercialized, a radical approach must be taken to fundamentally change the way a solar cell is produced. In this talk, we present two of these technologies from UCLA. The first technology is the organic polymer solar cell, and the other is the Copper-Indium-Galium-Selenide (CIGS) solar cell. Both are thin-film type devices with the active layers processed via low-cost solution-based coating. The organic solar cell is a bulk-heterojunction device, in which p and n-type organic molecules are blended to form a high surface heterojunction. This device has reached 8% power conversion efficiency and should exceed 10% within the next year or two. By focusing on fine tuning the composition and the crystallinity of the CIGS solar cell, we have achieved 10% efficiency. In this presentation, the science and our approach toward enhancing these two thin film solar cell technologies will be discussed.

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Center for Nanophase Materials Sciences