Tunable nano-suspensions for light harvesting; Discovery may be key to solar energy and smart glass technologies

Science Daily

The American Institute of Physics published Sureshkumar's research in *Applied Physics Letters* in July 2011 and his work is being presented at the SPIE Optics + Photonics conference on August 23.

Sureshkumar's utilized suspensions containing different types or a mixture of metal nanoparticles capable of interacting with different wavelengths of the visible spectrum through a phenomenon referred to as "plasmon resonance." When nanoparticles are introduced into a solution, their natural tendency is to agglomerate and settle down to the bottom of the solution. Hence, such suspensions are inherently unstable. This key challenge was overcome by Sureshkumar and coworkers by employing micelle fragments to act as bridges between nanoparticles thus holding them in place.

Along with LCS graduate students Tao Cong, Satvik Wani and Peter Paynter, Sureshkumar worked with Brookhaven National Laboratory's Center for Functional Nanomaterials to characterize the nano-suspensions using small angle x-ray scattering (SAXS) experiments to confirm their ability to create optimal nanoparticle dispersions with tunable optical properties.

"Several applications for this research can be envisioned within the energy field. For instance, the suspensions could be used as precursors to create coatings that improve the light trapping efficiency of thin film photovoltaic devices. Another application would be in the manufacturing of multifunctional smart glasses for building windows that generate energy from the visible range while blocking harmful ultraviolet (UV) rays."

This research was supported by a grant awarded by the National Science Foundation (CBET 1049454). The team also consists of L.C. Smith UG students Elia Baszczuk and Georo Zhou who participate in ongoing research.

SOURCE [1]

Source URL (retrieved on *04/19/2014 - 12:55pm*):
http://www.chem.info/news/2011/08/tunable-nano-suspensions-light-harvesting-discovery-may-be-key-solar-energy-and-smart-glass-technologies

Links:
[1] http://feeds.sciencedaily.com/~r/sciencedaily/~3/fObuXpFSqLM/110822112125.htm