

Nanotechnologies could slash cost of solar energy

February 3 2005

Nanotechnologies which can artificially change the optical properties of materials to allow light to be trapped in solar cells could greatly reduce the cost of solar energy. Research being carried out by the School of Electronics and Computer Science (ECS) at the University of Southampton is focusing on nanopatterning as the way to design effective solar panels.

‘By drawing features that are much smaller than the wavelength of light, photons can be confused into doing things they normally wouldn’t do,’ says Dr Darren Bagnall, of the School of Electronics and Computer Science. ‘By creating diffractive nanostructured arrays on the surface of solar cells we ensure that optical asymmetries are created that prevent light from escaping the solar cells.’

According to Dr Bagnall the light-trapping technologies could reduce the thickness of semiconductor materials needed in solar panels, and this would directly reduce the cost. The first challenge is to prove that the technology works in practice, the second key challenge will be to develop cost effective ways to produce nanopatterned layers.

The ECS approach is being applied to the £4.5M ‘Photovoltaic Materials for the 21st Century’ project which is funded by the Engineering and Physical Sciences Research Council (EPSRC). Other university partners in this project are Durham, Bangor, Northumbria, Bath and Loughborough. They have teamed up with industrial partners to develop solar cells which will make it possible for manufacturers to slash the cost

of solar energy by half.

Dr Bagnall comments: ‘We have already shown that we can use arrays of chiral nanostructures, such as swastikas, to change the polarisation of light, now we want to apply the same technology to photovoltaics.’

Source: University of Southampton

Citation: Nanotechnologies could slash cost of solar energy (2005, February 3) retrieved 26 April 2024 from <https://phys.org/news/2005-02-nanotechnologies-slash-solar-energy.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.