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RESEARCH DIRECTIONS

Pure, clean water

Dr Guodong Du of the Solar Energy Technologies (SET) Research Group, School of Computing, Engineering and Mathematics, has been awarded a prestigious Postdoctoral Research Fellowship by the Australian Solar Institute. The project will be undertaken in collaboration with Prof J Nowotny and A/Prof T Bak, UWS; Prof Z Guo, University of Wollongong; Prof GE Murch, University of Newcastle; Prof E Wachsman, University of Maryland; Prof S Fiechter, Helmholtz Center Berlin, and Prof A Uedono, University of Tsukuba.

'Solar energy, radiant light and heat from the sun, have been harnessed by humans since ancient times using a range of ever-evolving technologies,' says Dr Du. 'In countries where many people do not have access to clean water there is a need for cheap effective purification of water. Even when it looks clear, water can carry countless microscopic germs. This project will investigate the use of solar energy to remove microbial agents, such as e.coli bacteria, from water.'

This project will be using photosensitive oxide semiconductors developed by SET in processing high-performance photocatalysts, which have the capacity to remove bacteria and other toxic contaminants from water when exposed to sunlight. These effects will be studied using various complex approaches.

Solar energy technologies include solar heating, solar photovoltaics, solar thermal electricity and solar architecture, and these technologies can make considerable contributions to protecting the environment by solving some of the most urgent problems the world now faces. Development of low cost solar energy conversion systems are expected to have a wide range of applications and the development of hydrogen fuel, which burns cleanly

and can be used in hydrogen fuel cells, will lead to lower emissions of greenhouse gases. The technology of solar water purification will be of significant economic and social benefit nationally as well as in developing countries. This project will also enhance existing international collaborations.

Project Title: TiO_2-Based Systems for Solar Water Oxidation: Effect of Nano-Size Structures and Composition on Solar Water Disinfection and Solar Hydrogen Generation - the Solid State Science Approach
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August 2012

ASI AUSTRALIAN SOLAR INSTITUTE

This project has been supported by the Australian Government through the Australian Solar Institute (ASI). The Australian Government, through the ASI, is supporting Australian research and development in solar photovoltaic and solar thermal technologies to help solar power become cost competitive with other energy sources.