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CAMBRIDGE SOCIETY FOR THE APPLICATION OF RESEARCH

'PLANET NANOTECH'

(Nanoparticles and Their Potential for Application)

Professor Paul O'Brien FRSC
Professor of Inorganic Materials, University of Manchester

Monday, 7th February 2005; 7.30 - 9.00 p.m.
The Wolfson Lecture Theatre, Churchill College, Cambridge

Chair and Vote of Thanks:

Professor Elizabeth Hall (CSAR Member of Council)
Professor Sir Sam Edwards (President of the CSAR)

Professor O'Brien writes:

Quantum Dots are unique for two very important reasons, both of which have commercial potential; their electronic and their optical properties are each dependent on the particle size!

As the Quantum Dot nanoparticle becomes smaller the ratio of the number of surface atoms to those in the interior increase. For example in very small particles greater than a third of all atoms reside on the surface. Such a high surface area is useful for catalysis.

These small particles are one of the inventions spearheading a drive to control of materials with dimensions of the order of **nanometres**. The potential of the area of nanotechnology as being opened up by interactions between molecular biologists, chemists physicists and almost every type of engineer will be discussed. Applications of such technologies will range from computer chips through display screens to security printing. These new technologies will impact on all of our daily lives. Nanotechnology is attracting attention from all quarters from academia, venture capitalists to the general public.

This lecture will explain, with lots of illustrations, why the area is both so topical and important.

Professor O'Brien is also the founder of NanoCo Technologies Ltd. a University of Manchester based spinout company that aims to exploit University derived expertise in this area in the commercial sector; see http://www.nanoco.biz

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Italics denote an affiliation other than the University of Cambridge.
The CSAR Council is chosen to represent leading scientists and technologies from academe and industry

About the speaker:

Since 1999 Paul O'Brien has held the chair of Inorganic Materials Chemistry at the University of Manchester- spanning both the Chemistry Department and the Manchester Materials Science Centre.

His research interests concern the development of novel chemical routes for the deposition of materials (especially sulphur or selenium containing compounds). The materials are prepared both as thin films and isolated quantum dots. Paul has published over 100 papers and is the author and editor of several monographs. He lists his proudest scientific achievements as an incredibly simple method for the synthesis of quantum dots using a melt at a given temperature to produce small well-defined particles. As a strong advocate of communicating science to a wider audience, Paul gives an increasing number of popular or cross-cultural science lectures - usually on nanotechnology.

He has spoken at the Institute of Contemporary Arts and the V & A Museum, given several radio interviews and run master-classes for school children. He is Chairman of the Materials Forum of the Royal Society of Chemistry. He has also lectured on the value of science to the economy most notably to the annual conference of dstl scientists and to the Defence Academy UK (a high level course for senior officers, policemen and diplomats from many countries). This year he was Chemistry President for the British Association for the Advancement of Science.

Paul is also been involved in the innovative Café Scientifique programme, and a feature on his work will shortly appear at the Manchester Museum of Science and Industry.

Organising Secretary's housekeeping notes:

We're thinking about making a few changes to the way the lectures are run in future. This will not affect individual members in any way, but it will enable the CSAR to gain some benefit from the increasing number of non-members who attend (and enjoy) our meetings.

It will also enable our members to get better value out of the CSAR (if such a thing were possible!)

The changes will enable us to run an even better programme, with more financial flexibility than we have at present.

We may also change our name; to the Cambridge Society for the *Appreciation* and Application of Research (CSA^2R), since this describes more accurately what we offer. More about all this later!

Coffee and biscuits available, as usual, in the foyer from ~7.00 p.m.

Best

Richard Freeman
CSAR Organising Secretary