Making 'bucky-balls' in spin-out's sights

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(Phys.org) —A new Oxford spin-out firm is targeting the difficult challenge of manufacturing fullerenes, known as 'bucky-balls' because of their spherical shape, a type of carbon nanomaterial which, like graphene and carbon nanotubes, has unique physical properties leading to applications in areas as diverse as energy and medicine.

The firm, Designer Carbon Materials, has been established by Isis Innovation, the University of Oxford's technology commercialisation

company, and will cost-effectively manufacture commercially useful quantities of the spherical carbon cage structures. Designer Carbon Materials is based on research from Dr Kyriakos Porfyrakis of Oxford University's Department of Materials.

'It is possible to insert a variety of useful atoms or atomic clusters into the hollow interior of these ball-like molecules, giving them new and intriguing abilities. Designer Carbon Materials will focus on the production of these value-added materials for a range of applications,' said Dr Porfyrakis.

'For instance, fullerenes are currently used as electron acceptors in polymer-based solar cells achieving some of the highest power conversion efficiencies known for these kinds of solar cells. Our endohedral fullerenes are even better electron-acceptors and therefore have the potential to lead to efficiencies exceeding 10 per cent.

'The materials could also be developed as superior MRI contrast agents for medical imaging and as diagnostics for Alzheimer's and Parkinson's, as they are able to detect the presence of superoxide free radical molecules which may cause these conditions. We are receiving fantastic interest from organisations developing these applications, who until now have been unable to access useful quantities of these materials.'

The manufacturing process, patented by Isis Innovation, will continue to be developed by Designer Carbon Materials as it also makes its first sales of these extremely high-value materials.

Tom Hockaday, managing director of Isis Innovation, said: 'This is a great example of an Isis spin-out which is both looking at exciting future applications for its technology and also answering a real market need. There is already significant demand for these nanomaterials and we expect the first customer orders will be fulfilled over the next few

months.'

Investment in the company has been led by Oxford Technology Management and the Oxford Invention Fund. Lucius Carey from Oxford Technology Management said: 'We are delighted to be investing in Designer Carbon Materials. The purposes of the investment will be to move into commercial premises and to scale up.'

Provided by Oxford University

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