

RSC Prize and Award Lecture

Date of Lecture: Tuesday, 15th March 2011

Venue: Orton Lecture Theatre, 2nd floor, Adeilad Alun Roberts Building

Professor Molly Stevens, Professor of Biomedical Materials and Regenerative Medicine, Imperial College

Title: New bio-inspired materials for regenerative medicine and biosensing

Abstract: This talk will provide an overview of our recent developments in bio-inspired nanomaterials for tissue regeneration and sensing. Bio-responsive nanomaterials are of growing importance with potential applications including drug delivery, diagnostics and tissue engineering¹. Our recent conceptually novel approaches to real-time monitoring of protease (down to single enzyme sensitivity), lipase and kinase enzyme action using modular peptide functionalized nanoparticles will be presented^{2,3,4}.

The highly interdisciplinary field of Tissue Engineering (TE) can also benefit from advances in the design of bio-responsive nanomaterials. TE involves the development of artificial scaffold structures on which new cells are encouraged to grow. The ability to control topography and chemistry at the nanoscale offers exciting possibilities for stimulating growth of new tissue through the development of novel nanostructured scaffolds that mimic the nanostructure of the tissues in the body^{1,5}. Recent developments in this context will be discussed as well as novel approaches to in vivo tissue regeneration of large volumes of highly vascularised and hierarchically organized tissue^{6,7}.

References

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4. D. Aili, M. Mager, M. M. Stevens. Nano Letters. In press (2010)
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PRIFYSGOL BANGOR
BANGOR, GWYNEDD,
LL57 2DG

BANGOR UNIVERSITY
BANGOR, GWYNEDD,
LL57 2DG

FFÔN: +44 (0)1248 382375/7
FFACS: +44 (0)1248 370528
EBOST:chemistry@bangor.ac.uk

TEL: +44 (0)1248 382375/7
FAX: +44 (0)1248 370528
EMAIL: chemistry@bangor.ac.uk

www.bangor.ac.uk
www.chemistry.bangor.ac.uk