Dr James Bowen MEng, PhD, AMIChemE, AMIoMMM

Facilities Manager for Science City Advanced Materials II Chemical Engineering Research Fellow

School of Chemical Engineering (/schools/chemical-engineering/index.aspx)

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About

James is currently a postdoctoral research fellow and also the Facilities Manager for the Science City Advanced Materials II Laboratory in the School of Chemical Engineering.

Research interests:

- Nano/biomaterials science, conventional materials science, collaboration with life and medical sciences
- Surface modification via self-assembly, plasma treatment, and PVD
- Thin film characterisation using ellipsometry and XPS
- Nanomechanics, adhesion and microstructure via AFM, confocal Raman microscopy, and interferometry
- Complex fluids and soft solids including polymer melts (lubrication), hydrogels (tissue engineering), and solid/liquid suspensions (surface modification)

Qualifications

- PhD in Chemistry, University of Birmingham, 2006
- MEng(Hons) in Chemical Enginrering, University of Birmingham, 2001

Biography

James obtained his MEng (Hons) degree in Chemical Engineering in 2001. For his PhD he studied the adhesion of chemically modified surfaces in relation to cationic nanoparticle gene delivery systems. James subsequently undertook a postdoctoral position studying Newtonian and non-Newtonian liquids in nanoscale adhesive junctions, funded by Unilever Research & Development.

His research focuses on the role of intermolecular interactions in nanosystems, employing techniques including atomic force microscopy, spectroscopic ellipsometry, nanoindentation, and X-ray photoelectron spectroscopy. He has established collaborations with researchers in the biological and medical sciences, employing micro/nanometrology and micro/nanomechanical characterisation techniques in a variety of projects.

James is also Facilities Manager for the Science City Advanced Materials laboratory in the School of Chemical Engineering, a custom-built facility which houses equipment suitable for the characterisation of surfaces and materials. He has worked extensively with a wide range of companies, particularly those in the automotive, fast-moving consumer goods, and technology sectors.

Teaching

- Chemical Nanoengineering (Nanocharacterisation; Nanofluidics and Nanoreactors; Nanoparticles; Self Assembly; Supramolecular Chemistry; Thin Films).
- Colloids and Rheology (Colloid and Interface Science; Rheology; Rheology of Ultrathin Liquid Films; Rheometry).
- Measurement Techniques (Atomic Force Microscopy; Density and Porosity; Ellipsometry and Surface Plasmon Resonance; Indentation).
- Multiphase Systems (Intermolecular Forces; Interparticle Forces; Colloid Stability; Liquid-Gas and Liquid-Liquid Interfaces; Liquid-Solid Interfaces).
- Powder Handling and Processing (Mechanical Properties; Particle-Particle Interactions; Size and Size Distribution).

Research

Research themes

- Adhesion, contact mechanics and tribology
- Materials characterisation
- Microscopy and spectroscopy
- Surface and interface analysis
- Thin film systems

Other activities

ResearcherID profile: **www.researcherid.com/rid/B-9874-2011 (http://www.researcherid.com/rid/B-9874-2011)**

Academia.edu profile: **bham.academia.edu/JamesBowen (http://bham.academia.edu/JamesBowen)**

Publications

LinkedIn profile: **www.linkedin.com/in/bowenjames (http://www.linkedin.com/in/bowenjames)**

Researchgate profile: **www.researchgate.net/profile/James_Bowen4/ (http://www.researchgate.net/profile/James_Bowen4/)**

Expertise

- Nano/biomaterials science, conventional materials science, collaboration with life and medical sciences
- Surface modification via self-assembly, plasma treatment, and physical vapour deposition
- Thin film characterisation using ellipsometry and X-ray photoelectron spectroscopy
- Nanomechanics, adhesion and microstructure via atomic force microscopy, confocal Raman microscopy, and interferometry
- Complex fluids and soft solids including polymer melts (lubrication), hydrogels (tissue engineering), and solid/liquid suspensions (surface modification)
- Business engagement with the automotive, chemical, fast-moving consumer goods, pharmaceutical and technology sectors

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