Dr Surbhi Sharma PhD

Teaching Fellow
Research Fellow

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About

Surbhi Sharma is a Teaching & Research Fellow in the area of PEMFC and DMFC catalyst-supports in the School of Chemical Engineering.

Prior to this position she completed her PhD at the Nanotechnology and Integrated Bio-Engineering Centre at the University of Ulster where she carried out research on synthesis and electronic structure of graphene oxide for application as support for various metal nanoparticles (working with Pt, Ru and Au nanoparticles) and as catalyst for low temperature fuel cells. In addition she also investigated the use of Graphene oxide and CNTs in electrochemical biosensing applications.

Her current research interests are exploring the applications of graphene oxide based systems for catalyst-support systems and composite membranes for low temperature fuel cells.

Qualifications

- PhD in Nanotechnology, University of Ulster, 2010
- MSc in Nanoscience, Amity University, 2007
- BSc (Hons) in Physics, University of Delhi, 2004

Biography

Dr. Sharma completed her BSc (Hons) degree from the University of Delhi in 2004 followed by an MSc in Nanoscience from Amity University in 2007. She then went on to pursue PhD from University of Ulster where she studied Pt-Graphene oxide hybrids as catalyst-support system for application in DMFCs.

Following the successful completion of her PhD in 2010 she joined the Fuel Cells research group in the department of Chemical Engineering at University of Birmingham in February 2011.

Teaching

MSc MEng, CDT Module:

Techniques for Fuel Cell Characterisation

Advanced Electrochemical Characterisation

Research

Her current research is focussed on development and characterisation of graphene oxide based novel, CO-tolerant catalyst-support systems for proton exchange membrane fuel cells and direct methanol fuel cells.

She is also actively supervising a PhD project investigating the preparation and characterisation of graphene oxide based novel composite and multilayer polymer membranes for low temperature fuel cell applications.

She is also supervising the development of novel metal-polymer composite coatings for stainless steel bipolar plates for PEMFC automotive applications as part of a collaborative FP7 project.

Other research interests:

- Materials for energy storage and harvesting
- Biocompatibility and drug delivery applications of graphene oxide based systems

Publications

N Soin, T H Shah, S C Anand, J Geng, W Pornwannachai, P Mandal, D. Reid, S Sharma, R L Hadimani, D V Bayramol, E Siores (2014) Novel “3-D spacer” all fibre piezoelectric textiles for energy harvesting applications. Energy & Environmental Science 7, 5; 1670-1679

N Soin, S Sinha Roy, S Sharma, T Thundat, J A McLaughlin (2013) Electrochemical and oxygen reduction properties of pristine and nitrogen-doped few layered graphene nanoflakes (FLGs). Journal of Solid State Electrochemistry, 17, 8; 2139-2149

Sharma, S., and Pollet, B.G., (2012) Support materials for PEMFC and DMFC electrocatalysts - A review. J. Power Sources, 208, 96–119

Shang, N.G., Papakonstantinou, P., Sharma, S., Lubarsky, G., Li, M., McNeil, D.W., Quinn, A.J., Zhou, W., and Blackley, R., (2012) Controllable selective exfoliation of high-quality graphene nanosheets and nanodots by ionic liquid assisted grinding. Chem. Commun., 48, 1877-1879

G Congur, S Sharma, Arzum Erdem, Mihrican Muti, P Papakonstantinou (2012) Graphene oxide integrated sensor for electrochemical monitoring of mitomycin C–DNA interaction, Analyst 137; 2129-2135

Ganguly, A., Sharma, S., Papakonstantinou, P., and Hamilton, J., (2011) Probing the Thermal Deoxygenation of Graphene Oxide using In Situ Synchrotron X-Ray based Spectroscopies. J. Phys. Chem C., 115, 17009–17019

Muti, M., Sharma, S., Erdem, A., Papakonstantinou, P., (2011) Electrochemical Monitoring of Nucleic Acid Hybridization by Single-Use Graphene Oxide-Based Sensor. Electroanalysis, 23, 272-279

Sharma, S., Ganguly, A., Papakonstantinou, P., Miao, X., Li, M., Hutchison, J. L., Delichatsios, M., and Ukleja, S., (2010) Rapid Microwave Synthesis of CO Tolerant Reduced Graphene Oxide –Supported Platinum Electrocatalysts for Oxidation of Methanol. J. Phys. Chem. C, 114, 19459–19466

Erdem, A., Papakonstantinou, P, Murphy, H., McMullan, M., Karadeniz, H., Sharma, S. (2010) Streptavidin Modified Carbon Nanotube Based Graphite Electrode for Label-Free Sequence Specific DNA Detection Electroanalysis, 22, No. 6, 611 – 617

Patents

P Papakonstantinou, S Sharma, S K Bikkarolla, A Ganguly, J Davis. Oxygen Reduction Reaction Catalyst, -WO2012114108

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