
Advanced Materials Research Group project summary

Project Title	Nanomaterials and photovoltaic applications
Researcher	Dr Junpeng Liu Email: Junpeng.liu@nottingham.ac.uk
Project Summary	<p>Dr. Junpeng Liu's project is centred on synthesis and characterization of the structure, morphology, optical and electrical properties of optical absorber materials, buffer layer, transparent contact electrode fabricated using various technologies including colloidal chemistry method, aerosol assistant chemical vapour deposition, atomic layer deposition, physical vapour deposition and electrochemical deposition. The research aspect also include design, fabrication, characterization, optimization of organic solar cells, polymer solar cells, hybrid organic/inorganic solar cells and all inorganic solar cells. Characterization techniques used include scanning electron microscope, transmission electron microscopy, atomic force microscopy, surface profilometer, ellipsometer, X-ray Diffraction, X-ray fluorescence, X-ray photoelectron spectroscopy, Raman Spectroscopy, UV/VIS spectrophotometer, steady state and time resolved fluorescence, Hall measurement, I-V test, Quantum Efficiency / IPCE / Spectral Response and so on. Much of the work is aimed to develop an understanding of the relationship between the material, process technology and its performance and find a way to produce low cost and high efficiency solar cells.</p>