John V. Hanna, University of Warwick

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John V. Hanna is the leader of the Materials Solid State NMR Group in the Department of Physics at the University of Warwick and has over 200 publications in international, peer-reviewed journals (h~30, >300 citations/year) pertaining to materials and solid-state chemistry. Since 2008 his group has been part of the Centre for Magnetic Resonance located in Millburn House which is the UK's largest solid state NMR laboratory supporting seven solid state NMR instruments ranging in field from 2.35 T (100 MHz) - 14.1 T (600 MHz), the UK National High Field Solid State NMR User Facility (20 T, 850 MHz), two further DNP systems operating at 7.05 T (300 MHz) and 14.1 T (600 MHz, under development), and 5 EPR systems covering the Q, W and X bands. His funded research portfolio spans a large spectrum of energy materials and catalysis projects which include developments in: (i) doped electrolyte and cathode materials for solid oxide fuel cells, (ii) metal oxide/polymer hybrids for proton conduction fuel cells membranes, (iii) novel doping schemes in olivines and other polymeric phosphate materials for improved battery performance, (iv) doped CeO2 and supported Pt metal nanoparticle catalyst systems for NOX/SOX reduction from automotive emissions, (v) supported and capped Pd nanoparticle catalysts used for fractionation and hydrogenation reactions, and (vi) the characterisation of Co nanoparticle catalyst precipitation for Fischer-Tropsch hydrocarbon cracking processes. All of this research is directly supported by industrial partners such as Johnson Matthey, Unilever and Infineum Fuels, in addition to the UK Research Councils such as EPSRC and the TSB. His research focus strives to fully integrate the solid state NMR methodology, X-ray and neutron diffraction techniques, and DFT and MD modelling and computation to stimulate 'NMR crystallography' approaches to structure-function relationships.

Prior to this appointment he spent over 20 years in Australian Government Research where he directed solid state NMR facilities within CSIRO Coal and Energy Research and ANSTO Institute of Materials Engineering. The foci of these former positions centred on coal/organic geochemistry research (CSIRO), and the development of materials such as Synroc (and its constituent hollandite and zirconolite phases), glasses and glass ceramics, cements, geopolymers and mircoporous/mesoporous ion-exchangers for nuclear waste immobilisation and stream remediation (ANSTO). He brings to this position a large amount of experience directly related to materials development and characterisation using a variety of methodologies. As a former user of EMSL, and as the previous NMR/EPR representative in the UEC, he acutely understands the issues and demands necessary for the smooth operation of EMSL for the wider user community.