Materials for Sustainable Technologies: Platforms and Applications

Abstract:

Raman spectroscopy offers a wealth of chemical and physical information for a wide range of different materials. With an ongoing drive to develop multifunctional and sustainable technologies on smaller and smaller scales, coupling spectroscopic and nanoscale techniques such as AFM offers a route to be able to probe the properties of these materials below the diffraction limit. We will discuss the latest developments in biomaterials, energy storage, photovoltaics and 2D materials using both HORIBA's Raman and optical AFM systems.

HORIBA is a world leader in OEM spectroscopy, elemental analysis, forensics, GDS, ICP, particle characterization, XRF, Raman, spectroscopic ellipsometry, sulphur-in-oil, SPRi and water quality measurements to name but a few! In particular, HORIBA has over 50 years of experience in Raman spectroscopy, supplying researchers and technicians in academia and industry with world-leading scientific instruments and solutions.

Biographies:

Dr Adam Holland

Adam is proud to have been an HORIBIAN for over 25 years and has taken on a number of different roles, from applications engineer to product management. While always working on spectroscopy he has gained experience across a wide range of application areas extending from semiconductors into the wider materials field and more recently life sciences. Today he concentrates on Raman and photoluminescence spectroscopy but also has experience of modular spectroscopy systems, ellipsometry and etch process control. He also has a passion for developing customised solutions to address specific measurement challenges using HORIBA core technologies.

During his doctorate Adam focused on a number of spectroscopic and imaging techniques including photoluminescence, reflectometry, photocurrent (or optical beam induced current) and differential interference contrast microscopy. These were used to characterise defects in semiconductors including dislocations that act as parasitic current pathways in DRAMs, limiting memory cell size and capacity.

Dr Cian Bartlam

Cian joined HORIBA UK as a product manager for Raman and Optical Spectroscopy in January 2023. He studied for his bachelors in Chemistry at the University of Liverpool before working in polymer development for the coatings industry for 3 years. He went on to do a PhD in Materials at the University of Manchester, working on graphene formulations for electronic applications, specialising in AFM-coupled spectroscopy. After completing an EPSRC Doctoral Fellowship at the National Graphene Institute, he moved to the Institute of Physics, Universität der Bundeswehr Munich, where he worked as a research associate for 3 years developing and analysing chemical and optical 2D sensors for the semiconductor industry.