

Optically Thin (< 15 nm) Silver and Copper Films with a Dense Array of Tiny Holes

Ross A. Hatton*, Jessica Pereira, Philip Bellchambers, Jaemin Lee and Silvia Varagnolo
Department of Chemistry, University of Warwick, United Kingdom

Optically thin (< 15 nm) films of silver and copper patterned with a dense array of tiny apertures have numerous potential applications in sensors, displays and the emerging generation of thin film photovoltaic devices. The key to unlocking this potential is two-fold: (1) The development of sustainable processes that enable the formation of hundreds of millions of micron (and sub-micron) sized holes per square centimetre in said films, that are both low cost and scalable to large area. (2) The realisation of effective ways to slow air-oxidation of these very high surface/volume ratio metal films without electrically isolating the metal from its surroundings. This talk will describe recent developments in both areas by the Hatton group, motivated by the increasingly urgent need for a class of window electro dematched to the challenging requirements organic and perovskite photovoltaics.

Biography:

Ross Hatton is an Associate Professor of Chemistry at the University of Warwick in the United Kingdom (UK) and holder of a UK Engineering and Physical Science Early Career fellowship (2016-2020). He was awarded his PhD in 2003 from the University of Nottingham (UK) and a five-year Royal Academy of Engineering Research Fellowship in 2007. He has published over 50 papers in peer reviewed international journals and has a long-standing interest in exploring the utility of nanomaterials in emerging thin film photovoltaics, including carbon nanotubes, metal nanoparticles and nano-structured metal films.