Contribution submission to the conference Regensburg 2016

Principles of plamonic imaging — •Angela Demetriadou[1] and Alexei Kornyshev[2] — [1]Blackett Laboratory, Imperial College London, Prince Consort Road, SW7 2AZ, London, United Kingdom — [2]Department of Chemistry, Imperial College London, Prince Consort Road, SW7 2AZ, London, United Kingdom

Plasmonic imaging exploits the evanescent nature of propagating surface plasmon polariton (SPP) waves to produce real-time images of sub-wavelength objects with high-precision. It is commonly used in biological sciences to track and image organelles in cells, such as DNA, mitochondria and virus molecules. The fast dynamics of intra-cellular processes enforce to keep the cells under their native state (i.e. label-free) and to be imaged in real-time, establishing plasmonic imaging as a powerful tool for mapping and understanding cellular behaviour. Additionally, it has been widely used to map the electro-catalytic activity of single nanoparticles with high spatial resolution and sensitivity.

Our theoretical model describes the electromagnetic process that forms the plasmonic image, and accurately predicts the image properties for particles of any composition and size. The intensity and shape of the plasmonic image is dominated by the SPP-induced natural modes. Hence, through the theoretical model, spectroscopic information can be extracted from recorded plasmonic images, expanding the capabilities of current plasmonic imaging techniques.

Part: O
Type: Hauptvortrag;Invited Talk
Topic: Nanostructures at surfaces: Dots, particles, clusters
Email: a.demetriadou06@imperial.ac.uk