



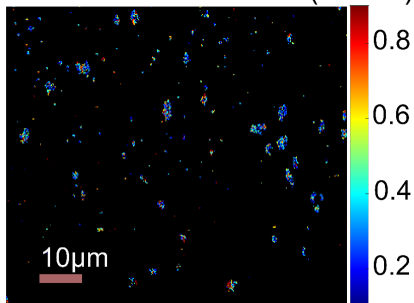
# Optics and Photonics Group Lunchtime Seminar

## “Impedance microspectroscopy - a new approach for electrical characterisation of living systems”

Sidahmed Abayzeed

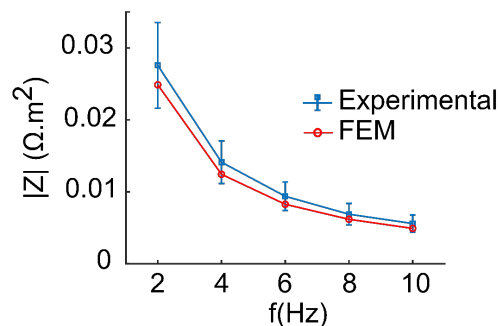
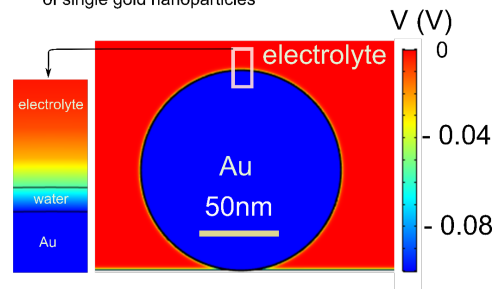
### Impedance microscopy

Surface charge dynamics at gold electrolyte  
interface of gold nanoparticles  $\sigma$  (C m<sup>-2</sup>)



### Finite element modelling

Finite element modelling of electrical properties  
of single gold nanoparticles



13:30 Wednesday 01 June 2022  
B3 Life sciences building  
All Welcome

Add to Calendar



# “Impedance microspectroscopy - a new approach for electrical characterisation of living systems”

Sidahmed Abayzeed  
13:30 Wednesday 01 June 2022  
B3 Life sciences building  
All Welcome  
MS Teams link

Impedance spectroscopy is a powerful tool that is widely used for characterising electrical properties of materials. In biology, this technique provided key insights into the dielectric properties of cells and biomolecules. Therefore, it is widely applicable to assay several cellular processes such as cell proliferation, cell migration and cytotoxicity. The technology has been developed to resolve single cells creating vital applications in medical diagnosis. However, exposing subcellular electrical properties remains a challenge. This is crucial for in-depth understanding of electrical communication in living organisms. This talk will discuss key challenges in characterising complex biological samples and the potential to be addressed with the new impedance imaging technology. I will present an overview of the development of impedance spectroscopy and highlight some of the recent directions such as wireless intracellular sensing and impedance microscopy.