OPTICS & PHOTONICS
UNIVERSITY OF NOTTINGHAM

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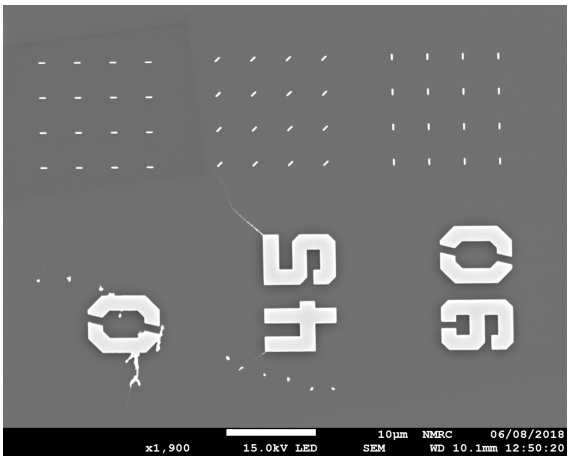
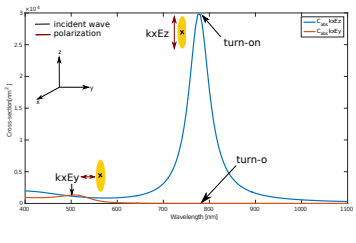
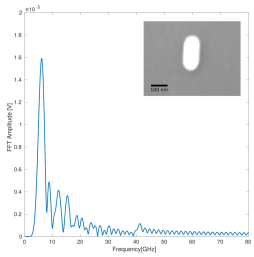
Optics and Photonics Group
Lunchtime Seminar

"Gold nanorod opto-acoustic transducers"

Shakila Naznin







Abstract

1:00pm Wednesday 17th October 2018
203 Tower building
All Welcome

http://optics.nottingham.ac.uk/wiki/Talks_2018

“Gold nanorod opto-acoustic transducers”

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Metallic nanorods are of special interest in laser and picosecond ultrasonics because they exhibit anisotropic surface plasmon resonances and polarization dependent cross-sections. These can be tuned from visible to near infrared by changing the size and shape of the rods. This in turn will allow us to think about the generation and detection of ultrasound by controlling the size, shape and orientation of the nanorods. Gold nanorod (GNR) has sharp longitudinal surface plasmon resonance and attractive photo-thermal properties. We explore the use of gold nanorods as advanced opto-acoustic transducers in the GHz region by ultrafast laser excitation. Polarization sensitivity of nanorod has motivated us to design gold nanorod transducers to overcome the limit of lateral resolution that can contribute to the living cell imaging. Optical response is simulated to enhance the generation and detection of vibrational states of nanorods. We could not only successfully detect the extensional and breathing vibrational modes of gold nanorods but also the obtained results characterize the size of the nanorods accurately. Electron beam lithography (EBL) is a direct and flexible writing technique and nanorods of any size in any orientation can be designed. So we have started to design some nanorods by EBL and the work is in progress.