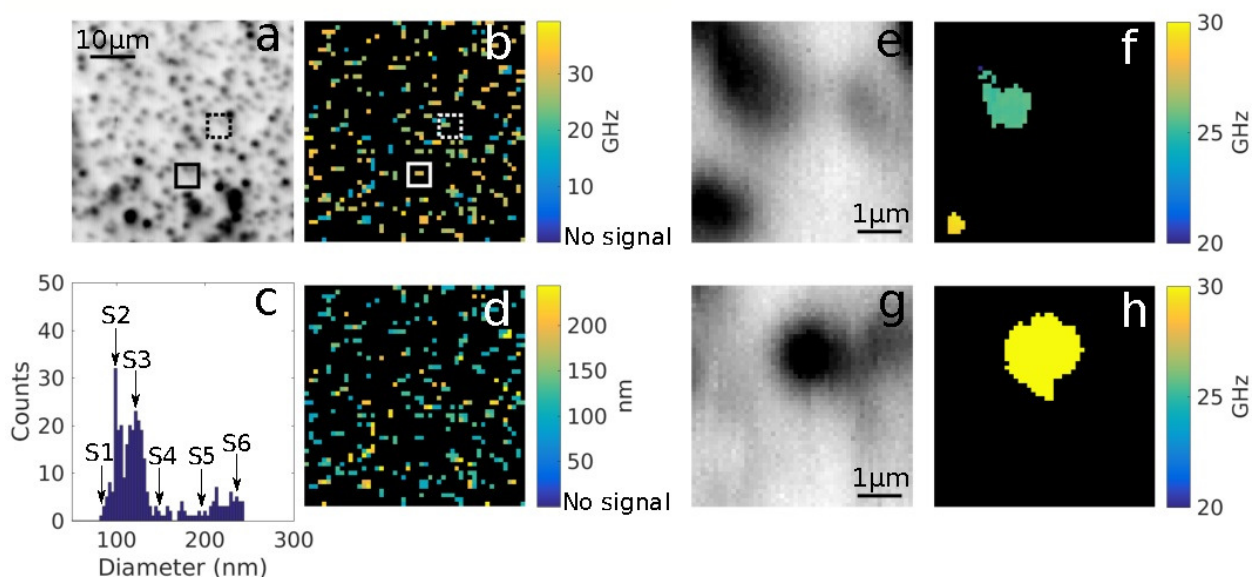




# Optics and Photonics Group Lunchtime Seminar

## “An overview of plasmonic nanoparticles in picosecond laser ultrasound: a possible way to super-resolution?”

Rafael Fuentes



12:00pm Thursday 4th May 2017  
203 Tower Building  
All Welcome

[http://optics.nottingham.ac.uk/wiki/Talks\\_2017](http://optics.nottingham.ac.uk/wiki/Talks_2017)



Abstract

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Exploiting the plasmonic resonances of metal nanoparticles can enhance the optical generation and detection of their main vibrational state using a pump-probe system. Choosing the right size of the particle and/or probe laser wavelength, the detected signal can be increased by a large factor without increasing the power density of the lasers. This opens the possibility of using nanoparticles as sources/detectors of ultrasound for cell imaging where the transducer is inside the sample, allowing an increase in the lateral resolution while avoiding damage to the sample. The vibrational frequency is completely independent of the optical scattering and only depends on the size of the nanoparticle which provides both a method of optical characterisation of sub-resolution particles and a possible alternative route to super-resolution.