Spring
2025

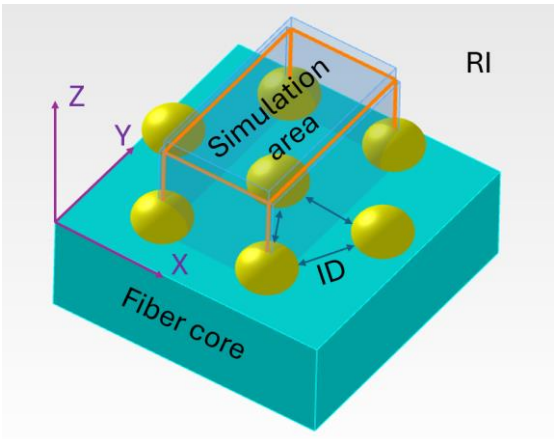
Optics & Photonics Group Lunchtime Seminar Series

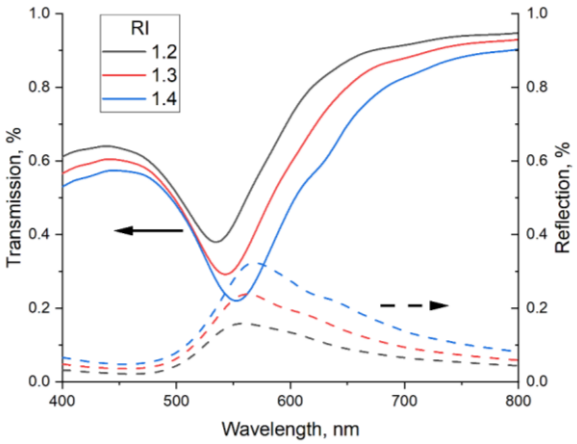
University of Nottingham

LSPR-based optical fibre refractive index sensors based on gold nanospheres

Dr Ivan Gorbov

Optics & Photonics





12:00 Wed 14 May 2025

Coates – Room C25

OPTICS & PHOTONICS
UNIVERSITY OF NOTTINGHAM

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Dr Ivan Gorbov

LSPR-based optical fibre refractive index sensors based on gold nanospheres

Abstract

The difference between detection of absorption and reflection signals at the varying refractive index (RI) values for gold nanospheres deposited on the tip of an optical fibre sensor was studied. Localised surface plasmon resonance (LSPR) peak shifts for absorption and reflection were studied both using simulation and experiment at various interparticle distances to estimate fibre sensor sensitivity. For experimental validation, Au nanoparticles (Au-NPs) were deposited using layer-by-layer deposition method with the aid of poly (allylamine hydrochloride) (PAH) and 3-Aminopropyltriethoxysilane (APTES). Samples prepared with APTES showed more efficient adsorption of the Au-NPs onto the tip of the optical fibre. The effect of hollow Au nanoshell structures and their sensitivity was studied.

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All are welcome

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