Plasmon-Enhanced Fluorescence and Chemiluminescence for Biosensing Applications

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Abstract. The talk will first explore how plasmonic nanostructures amplify optical signals to enhance fluorescence and chemiluminescence. It will then examine their application in highly sensitive and rapid optical biosensing. Emphasis will be placed on two practical platforms: high-throughput 96-well plate readers and portable lateral flow paper-based assays. By integrating plasmonic materials into these systems, significantly improved detection limits and assay performance can be achieved across a range of biological targets.

Curriculum Vitae. Prof. Dr. Fang Xie joined Imperial College London in 2008. Her research is in the area of plasmonic materials with a particular emphasis on the role of plasmonic and nanoscale properties in enhancing devices for healthcare and energy applications. The work from her research group combines numerical modelling, system design and fabrication, and testing and characterisation–carried out correlatively. Building interdisciplinary teams and worldwide collaborations with leading research institutions, she leads an interdisciplinary research group; currently three PDRAs and 12 PhD students working across applied nanomaterials science and engineering. She has a research portfolio of over £12 M from a range of sources: (EPSRC, Royal Academy of Engineering, the Leverhulme Trust, Michael J. Fox Foundation (US), British Council, Royal Society, NERC, Prostate Cancer UK, and Imperial College London). She published over 100 high quality journal articles.