

第128回 応用化学セミナー



題目 : Sensors, Sample Preparation, and Fluidic Manipulation

講師 : Prof. Ruchi Gupta

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日時 : 令和6年10月22日 (火) 15:00~16:00

場所 : B5棟6階6B-31室

Gupta先生は、光化学/バイオセンサの研究者で幅広い応用展開を進めています。最近では、ハイドロゲルを用いたバイオセンサ”Smart lollipop”を開発し、口腔がんを簡便に診断可能な検査キットの実用化を進めています。この度、本学へ来学されることになりましたのでご講演をお願いいたしました。奮ってご参加ください。

Summary: In this presentation, I will discuss the work done in my group on a type of optical sensors called leaky waveguides (LWs). I will discuss their applications for measurement of ferritin and its average iron content, which can be used for early identification of high-risk trauma patients. LWs are universal sensors and hence we have been working to extend their applications to a range of protein biomarkers (e.g., vascular endothelial growth factors, lactoferrin), DNA, and small molecules.

Subsequently, I will discuss our research on hydrogels for concentration, fluorescent labelling, and light-triggered release of proteins followed by their detection. Currently, our hydrogel can measure proteins with a limit of detection of 0.003 ppm or 53 pM for an exemplar analyte, streptavidin, while being less laborious than the state-of-the-art method, enzyme-linked immunosorbent assay.

Finally, I will discuss an upcoming research direction in my group on fluidic manipulation using acoustics.

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