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Target Analyte Detection using Optical Sensors based on Modified Graphene Oxide

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Tracking and detection of biochemicals serves as a powerful tool for acquiring crucial information in a multitude of applications extending from environmental analysis to medical diagnosis. Long-term exposure or abnormal concentrations of some chemicals can cause serious health problems. Therefore, their rapid and sensitive detection is critical for academic and practical research purposes.

Graphene oxide (GO) is a promising chemically tunable platform for bioanalytical and optical sensing applications. It is of great interest to develop functionalized GO based sensors to buckle down the limitations of standard bioassays. Considering these facts, GO was modified with different metals and non-metals for recognition of analytes of interest. The constructed functionalized GO samples were studied using various surface characterization techniques. The catalytic and sensing properties of modified GO were investigated using optical: colorimetric and fluorometric methods, for the detection of diverse biochemicals.

Results advocate that the fabricated GO based optical sensors enabled high performance, cost-effective, and rapid quantitative detection of the target analytes with high sensitivity and selectivity in comparison to routine techniques. The findings in this work elucidate the prospects of modified GO for optical and biosensing applications.

Biography:

Ayesha Saleem is a Lecturer of Physics at the Forman Christian College. Her research interests include development of electrochemical, fluorometric, and colorimetric sensors and assays for biomolecular/chemical detection and biomarker discovery. She is interested in gaining expertise in point of care and wearable devices. She studied Physics as a major from Lahore College for Women University from 2002-2009. She was a visiting researcher at Zare Lab, Stanford University in 2019, where she worked on analysis of sweat, breath and tear samples for biomarker discovery using mass spectrometry. In 2023, she received her doctoral degree in Physics from COMSATS University Islamabad.