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Gold nanoparticles-based fluorescent turn-on sensor for the selective and sensitive detection of dimethoate**Tai-Chia Chiu**

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A simple strategy for the fabrication of a highly selective and sensitive dimethoate probe based on Rhodamine B (RB) functionalized Gold Nanoparticles (AuNPs) was developed. The quenching of fluorescence of RB occurs in the presence of AuNPs in the solution through the Fluorescence Resonance Energy Transfer (FRET) has been observed. In the presence of dimethoate, the FRET-based fluorescence of RB and AuNPs would be gradually recovered for the reason that dimethoate could displace RB molecules on the surface of AuNPs, leading to a significant increase in fluorescence intensity. The fluorescence was used for the detection of dimethoate concentration ranging from 0.005-1.0 ppm ($R^2=0.989$) and recoveries of water and fruit samples were in the range of 101%-116%. This method has excellent selectivity and sensitivity for the detection of dimethoate in the presence of other pesticides. Owing to its high sensitivity, excellent selectivity and convenient procedure, this method will provide a promising alternative for dimethoate screening.

Biography

Tai-Chia Chiu has completed his PhD degree in Chemistry from National Taiwan University, Taiwan in 2003. He is currently working as a Professor of Applied Science at National Taitung University in 2016. He has published more than 40 papers in reputed journals. His current research includes the development of analytical techniques for small molecules by capillary electrophoresis and green methods for synthesizing fluorescent carbon dot and its applications.

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