5th International Conference and Exhibition on

LASERS, OPTICS AND PHOTONICS

November 28-30, 2016 Atlanta, USA

"Turn-off" fluorescent data array sensor based on double quantum dots coupled with chemometrics for highly sensitive and selective detection of multicomponent pesticides

Haiyan Fu

South-Central University for Nationalities, China

As a popular detection model, the fluorescence "turn-off" sensor based on quantum dots (QDs) has already been successfully employed in the detections of many materials, especially in the researches on the interactions between pesticides. However, the previous studies are mainly focused on simple single track or the comparison based on similar concentration of drugs. In this paper, a new detection method based on the fluorescence "turn-off" model with water-soluble ZnCdSe and CdSe QDs simultaneously as the fluorescent probes is established to detect various pesticides. The fluorescence of the two QDs can be quenched by different pesticides with varying degrees, which leads to the differences in positions and intensities of two peaks. By combining with chemometrics methods, all the pesticides can be qualitative and quantitative respectively even in real samples with the limit of detection was 2x10-8 molL-1 and recognition rate of 100%. This work is, to the best of our knowledge, the first report on the detection of pesticides based on the fluorescence quenching phenomenon of double quantum dots combined with chemometrics methods. What's more, the excellent selectivity of the system has been verified in different mediums such as mixed ion disruption, waste water, tea and water extraction liquid drugs. The results show that this fluorescent "turn-off" mode combined with chemometrics methods is a promising approach for the future study of the detection of pesticides residues.



Biography

Haiyan Fu is an experienced Researcher in Analytical Techniques and Chemometric. She has completed her PhD from Hunan University. She is an Associated Professor and Director of the Department of Pharmaceutical Analysis at South Central University for Nationalities, China.

fuhaiyan@mail.scuec.edu.cn