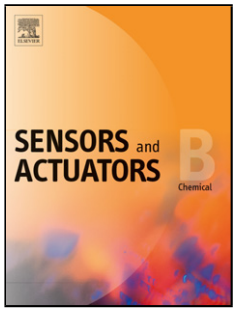

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Raman Rapid Detection of Environmental Hormone

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Highlights

- •Two-step approach is used to make hydrophobic core-shell Au@Ag@IP_6/DT.
- •Au@Ag@IP_6/DT NPs shows great SERS effect for detecting DEHP in energy drinks.
- •This assay has merit of rapidness, simplicity and on-site with portable Raman system.

Abstract

Diethylhexyl phthalate(DEHP) is a kind of plasticizer，which is regarded as environmental hormone due to reproductive toxicity to human body and also has the risk of breast cancer, endometrial cancer and liver cancer after long-term intake. In this work, a rapid surface enhanced Raman scattering (SERS) technique to detect the DEHP residue level in food products is developed by optimizing the synthesis of a hexakisphosphate (IP_6) stabilized Au@Ag@IP_6 nanoparticles. For further improvement of detection sensitivity, such SERS substrate is treated by using 1-dodecanethiol (DT) to enable its capability of capturing more DEHP molecules into