



Register



Journal

Journal of Environmental Science and Health, Part B>

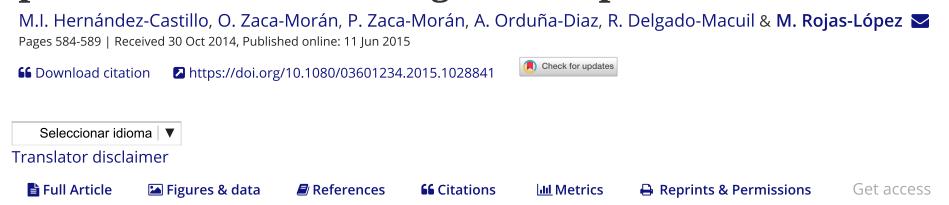
Pesticides, Food Contaminants, and Agricultural Wastes

Volume 50, 2015 - Issue 8

156 2
Views CrossRef citations O Altmetric

ARTICI ES

Surface-enhanced Raman scattering of the adsorption of pesticide endosulfan on gold nanoparticles



Abstract

The absorption of pesticide endosulfan on the surface of gold nanoparticles results from the formation of micrometric structures (1–10 μ m) with irregular shape because of the aggregation of individual particles. Such aggregation of gold nanoparticles after absorption of pesticide shows a surface-enhanced Raman scattering (SERS) spectrum, whose intensity depends on the concentration of endosulfan. In addition, the discoloration of the colloidal solution and a diminishing of the intensity of the surface plasmon resonance absorption from individual particles were observed by UV-visible spectroscopy. At the same time, a second band between 638 and 700 nm confirms the formation of aggregates of gold nanoparticles as the concentration of endosulfan increases. Finally, we used the SERS intensity of the S–O stretching vibration at 1239 cm⁻¹ from the SO₃ group as a measure of concentration of pesticide endosulfan. This method could be used to estimate the level of pollution in water by endosulfan in a simple and practical form.

Keywords: Gold nanoparticles, endosulfan, aggregation, SERS







People also read

Article

Determination of Pesticides by Surface-Enhanced Raman Spectroscopy on Gold-Nanoparticle-Modified Polymethacrylate >

Han Zhang et al.

Analytical Letters

Volume 49, 2016 - Issue 14

Published online: 29 Feb 2016

Article

Establishment of rapid detection method of phosalone residues in pakchoi by surface-enhanced Raman scattering spectroscopy >

Shuanggen Huang et al.

Spectroscopy Letters Volume 49, 2016 - Issue 2

Published online: 29 Oct 2015

Information for

Authors

Editors

Librarians

Societies

Help and info

Help

FAQs

Newsroom

Contact us

Commercial services

Open access

Overview

Open journals

Open Select

Cogent OA

Connect with Taylor & Francis











Copyright © 2018 Informa UK Limited Privacy policy & cookies Terms & conditions Accessibility

Registered in England & Wales No. 3099067 5 Howick Place | London | SW1P 1WG