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Data Article

Chemical structure of hollow carbon spheres and polyaniline nanocomposite

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ABSTRACT

In this data article, the chemical data of hollow carbon spheres and polyaniline (HCS@PANI) nanocomposite are presented for the research article entitled "Novel electrochemical biosensor based on core-shell nanostructured composite of hollow carbon spheres and polyaniline for sensitively detecting malathion" (He et al., 2018) [1]. The data includes chemical structure and components obtained by Raman spectra, X-ray photoelectron spectroscopy (XPS), and nitrogen adsorption and desorption isotherms.

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Specifications Table

Subject area	*Chemistry*
More specific subject area	*Biosensor Material*
Type of data	*Figures*

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How data was acquired	Raman spectra were taken with Renishaw inVia-Raman Spectroscopy, equipped with a holographic grating of 1800 lines mm^{-1} and a He-Ne laser (632.8 nm) as an excitation source. X-ray photoelectron spectroscopy (XPS) analysis was obtained from an AXIS HIS 165 spectrometer (Kratos Analytical, Manchester, UK) with a monochromatized Al KR x-ray source (1486.71 eV photons). The N_2 adsorption-desorption isotherms were conducted using a Micromeritics ASAP 2010 instrument with a liquid nitrogen at the temperature of 77 K. The specific surface area was calculated by the Brunauer-Emmett-Teller (BET) method.
Data format	*Analyzed*
Experimental factors	*The samples were ground evenly before measurements*
Experimental features	*The chemical structure and elemental components were examined.*
Data source location	*Zhengzhou University of Light Industry, Zhengzhou 450002, China.*
Data accessibility	*Data are presented in this article*

Value of the data

- The data presented in this article shows detailed chemical structure of HCS@PANI nanocomposite.
- This data allows other researchers to compare the preparation of HCS@PANI nanocomposite.
- For fabricating nanocomposites with other functional materials provides a suitable way for biosensors application.

1. Data

The chemical structure, surface morphologies, and electrochemical performances of HCS@PANI nanocomposite were discussed the our previous work [1]. Raman spectra of the as-prepared HCS and HCS@PANI nanocomposite are shown in Fig. 1. For the pure HCS sample, the G band at 1591 cm^{-1} and D band at 1338 cm^{-1} are observed, which correspond to graphitic carbon and disordered carbon, respectively [2]. In case of HCS@PANI nanocomposite, four major peaks corresponding to

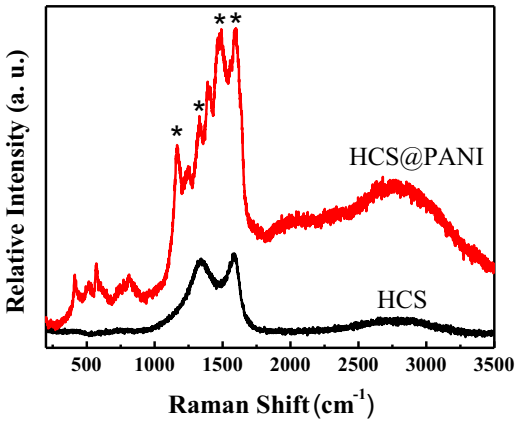

Fig. 1. Raman spectra of HCS and HCS@PANI nanocomposite.

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