Catalyst-free synthesis of carbon nanospheres for potential biomedical applications: waste to wealth approach

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Abstract

A single step and simple pyrolysis technique is used to prepare carbon nanospheres (CNSs) from natural bio waste sago hampas in a nitrogen atmosphere without any catalyst. Scanning electron microscope (SEM) images along with transmission electron microscope (TEM) images show evidence of high quality CNSs with a good particle size uniformity. Both X-ray diffraction (XRD) and Raman data show the presence of graphitic characteristic peaks of CNSs. Zeta-potential study reveals that the obtained CNSs can be well dispersed in solution making them suitable for cell imaging applications. The use of biowaste sago hampas is very important from the viewpoint of sustainable synthesis of functional CNSs for the future.

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