عنوان مقاله:

Investigation of hydrothermal process time on the size of carbon micro- and nano-spheres

محل انتشار:

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نویسندگان:

Khadijeh Hemmati Kahradeh - *Department of Physics, Faculty of Basic Science, Tarbiat Modares University, Tehran, Iran.*

Esmaiel Saievar-Iranizad - *Department of Physics, Faculty of Basic Science, Tarbiat Modares University, Tehran, Iran.*

Amir Bayat - *Department of Physics, Faculty of Basic Science, Tarbiat Modares University, Tehran, Iran.*

خلاصه مقاله:

In this study, carbon nano-micro spheres with tightly controllable size, regularand perfect shape, high yields and narrow size distribution were prepared simply fromglucose and DI water as precursors using a hydrothermal method. By setting the initialconcentration of glucose solution and changing the hydrothermal process time at aconstant temperature of ۱۶۰ °C, carbon spheres with various sizes were synthesized in asealed autoclave. The relationship between the average carbon sphere size andhydrothermal process time has been discussed. By increasing the hydrothermal process timeat a constant temperature (۱۶۰ ° C) and a constant concentration of glucose solution (۰.۷۵ molar),carbon nano-micro spheres were obtained. The diameters of carbon nano-micro spheressynthesized in this study ranged from ۹۰ nm to ۴.۵ μm. The obtained carbon nano-microspheres were analyzed by different techniques including scanning electron microscopy(SEM), X-ray diffraction patterns (XRD), energy dispersive spectrometry (EDS) andRaman analysis. In addition, the existence of surface functional groups on carbonnano/micro spheres was characterized by Fourier transform infrared (FTIR)measurements.

کلمات کلیدی:

Carbon microspheres, Carbon nanospheres, Hydrothermal process