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New Techniques for Determining Dopant Concentrations In Nitrogen Doped Carbon Nanospheres

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Abstract content
   (Max 300 words)

Carbon nanostructures have been the object of intensive research over the last two decades due to their potential to have a positive impact on materials. While carbon nanotubes have been studied extensively, there is still relatively little research conducted on doped carbon nanospheres . As part of a continuing characterization study of doped carbon nanospheres and their synthesis a new technique is being developed to determine the quantity and quality of dopant concentration in the spheres using different synthesis techniques. The spheres are synthesized in a CVD reactor using different ratios of reagents in an attempt to tune the nitrogen concentration of the doped nanospheres. An EPR spectrometer allows for an accurate determination of the mass concentration of paramagnetic sites using techniques developed over the last four years. It is suggested that the paramagnetic sites are due to substitutional nitrogen. The experimentally determined concentrations can then be used to provide useful feedback to the synthesis process. Raman Spectroscopy studies allow for investigation of structural changes, and to probe the type of bond the dopants form with the carbon lattice. AC susceptibility studies on the spheres provide complementary information on the magnetic properties of the doped nanospheres.

Apply to be
 considered for a student
   award (Yes / No)?

Yes

Level for award
 (Hons, MSc,
   PhD)?

PhD

Main supervisor (name and email)
and his / her institution

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No

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