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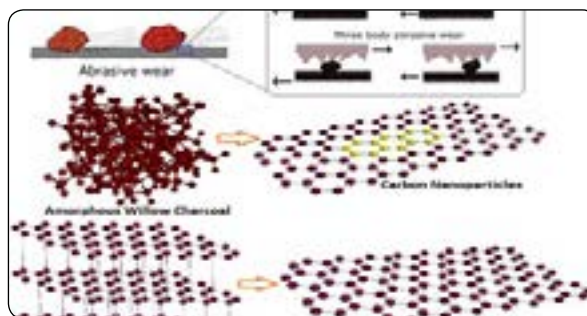
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Isolation of 2D Material by sand paper abrasion

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The research on nanocarbons has expanded over the past 20 years, including the structures viz. zero dimensional (fullerenes)¹, one-dimensional (nanotubes)², and two dimensional (graphene)³, where the properties are mainly governed by a set of parameters including their size, morphology and structure. The preparation process largely involves arc-discharge, laser ablation, gas-phase catalytic growth from carbon monoxide and chemical vapor deposition (CVD) from hydrocarbons, involving a lot of energy and industrial preparation becomes onerous. The controlled synthesis of nanocarbons is the key factor to manipulate and tailor their characteristics⁴. The realm of carbonaceous materials in their nano form have a diverse applications and at the same time fabricating high quality of such materials is quite challenging. In this article, we have used an ultra-fine silicon carbide sandpaper for chiseling willow charcoal and graphite rods for the isolation of nanocarbons viz. Carbon Nanoparticles and Graphene. This fabrication process produced value added products from the precursor materials in large quantity. The probable abrasive wear mechanism was elucidated and the final products were characterized using SEM, Raman spectroscopy, TEM and XRD.



Recent Publications:

1. H. W. Kroto, J. R. Heath, S. C. O'Brien, R. F. Curl and R. E. Smalley, (1985) 'This Week's Citation Classic' Nature, 318, 162.
2. S. Iijima, Helical microtubules of graphitic carbon. Nature. (1991) 354(6348):56.
3. KS Novoselov, AK Geim, SV Morozov, D. Jiang, Y. Zhang, SV Dubonos, IV Grigorieva, AA Firsov, (2004) Electric field effect in atomically thin carbon films, Science 306, 666
4. P. Mandal, M. J. P. Naik, M. Saha, (2018) Room temperature synthesis of Graphene, Crystal Research and Technology Doi: 10.1002/crat.201700250

Biography

Peetam Mandal has completed his 5 years integrated M.Sc with a First Division in Applied Chemistry from Central University of Jharkhand, Ranchi, India. He has joined the Department of Chemistry, NIT Agartala as regular PhD student. His research area includes the synthesis of carbon nanoparticles/ graphene/ graphene oxide/ nanocomposites and their application in solar cell.

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