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Isolation of graphene nano-flakes and carbon nanoparticles by sand paper abrasion

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The research on nano carbons has expanded over the past 20 years, including the structures viz. zero dimensional (fullerenes), one-dimensional (nanotubes) and two dimensional (graphene), 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 nano carbons is the key factor to manipulate and tailor their characteristics. The realm of carbonaceous materials in their nano form has a diverse application and at the same time fabricating high quality of such materials is quite challenging. In this article, we have used ultra-fine silicon carbide sand paper for chiseling willow charcoal and graphite rods for the isolation of nano carbons. 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 and XRD.

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