

Supporting Information

Deploying Used Solid Carbon Dioxide to Assist Graphite Exfoliation

Nicky Kumar Lamba,^a Pawan Choudhary,^a Jaidev Kaushik,^a Kumud Malika Tripathi,^b Shyam
Kumar Choudhary,^{*c} and Sumit Kumar Sonkar^{*,a}

^a*Department of Chemistry, Malaviya National Institute of Technology, Jaipur, Jaipur-302017, INDIA*

^b*Department of Chemistry, Indian Institute of Petroleum and Energy, Visakhapatnam, Andhra Pradesh-530003, India*

^c*Graphene Center, Tata Steel Limited, Jamshedpur, Jharkhand 831007, India*

^{*} *Corresponding author: E-mail: sksonkar.chy@mnit.ac.in, sk.choudhary1@tatasteel.com*

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1. S1 Experimental

S1.1 Materials

Graphitic Powder was purchased from TATA Steel Industries. Dry ice (solid CO₂) was provided by GC life Sciences, Deionised water was purchased from Vision.

S1.2 Exfoliation of Graphite using Dry Ice

Initially, ~1 g of Graphitic powder was mixed well in 20 mL of Deionized (DI) water homogeneously. After that, the mixture was transferred to a stainless-steel hydrothermal reactor (~50 ml) (**Scheme 1**) and 10 g of Solid CO₂ was added. The reaction mixture was heated to 100 °C for 4 hrs. After the completion of the reaction, all the reaction mixture was centrifuged and the obtained centrifuged solid was dried in an oven overnight at 70 °C.

S1.3 Material Characterization and Analysis

Powder X-ray diffraction (PXRD) analysis was performed by using an X-ray diffractometer instrument (Panalytical X Pert Pro). Brunauer-Emmett-Teller (BET) analysis was performed by using a Nova Touch LX2 gas sorption analyzer from Quantachrome Instruments. UV-DRS was performed using LAMBDA 750 (Perkin Elmer) UV-Vis NIR Spectrophotometer.

2: Comparative Raman analysis of Graphite and Exfoliated Graphite

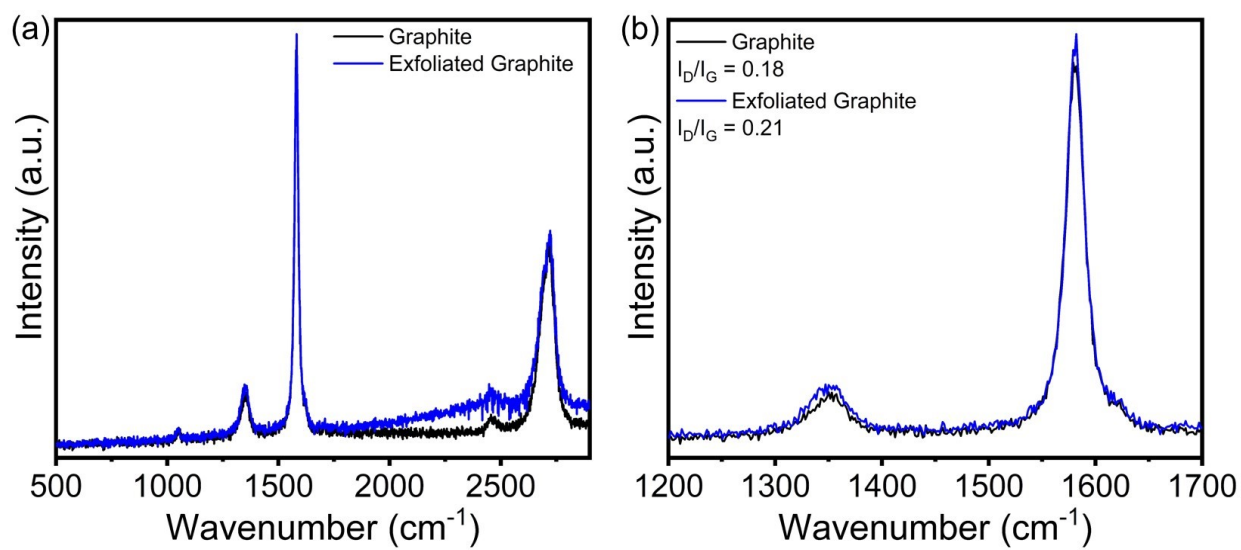


Fig. S1: (a) Comparative Raman spectra of Graphite and Exfoliated Graphite. (b) Zoomed Raman Spectra of Graphite and Exfoliated Graphite focussing on D and G bands.