Electronic Supplementary Information (ESI)

Photoinduced luminescent carbon nanostructures with ultra-broadly tailored size

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Supporting information

Experimental

Fs laser with a wavelength of 800 nm was produced by a regenerative amplified mode-locked Ti: sapphire laser (100 fs pulse duration, 1 kHz repetition rate) and focused on the bulk graphite (or bagasse) target immersed in the solution or into the graphene dispersion in the ethanol for ablation. In the case of graphene dispersion case, the concentration is set to be about 15 mg (graphene)/50 ml (ethanol). Transmission electron microscopy (TEM) and high resolution transmission electron microscopy (HRTEM) images were recorded by a high resolution transmission electron microscope (Tecnai G2 F20 S-TWIN, FEI). The scanning electron microscopy (SEM) images were obtained by using the field emission scanning electron microscope (JEOL, JSM-6700F). Raman spectra were obtained with a Laser Raman HR-800 spectrometer with a 325 nm laser as excitation source. The emission spectrum measurements were done on the Fluoro Max-3 spectrometer (Horiba Jobin Yvon) or FLS920 fluorescence spectrophotometer. The quantum yield (QY) was measured with the Edinburgh Instruments integrating sphere. Two-photon luminescence was excited by the fs laser with a wavelength of 800 nm and detected by the Hamamatsu C8808-01 (No. 72006) photonic multichannel analyzer. The fluorescence microscopy images were taken with an Olympus BX51M microscope. The light source for fluorescence microscopy observation was a mercury lamp with a fluorescent filter.

FIGURES

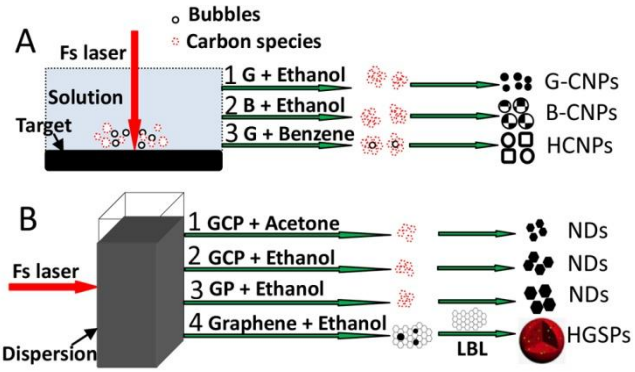

Fig. S1 Schematic illustration of FLAS. G: bulk graphite. B: bulk bagasse. GCP: glassy carbon powders. GP: graphite powders.

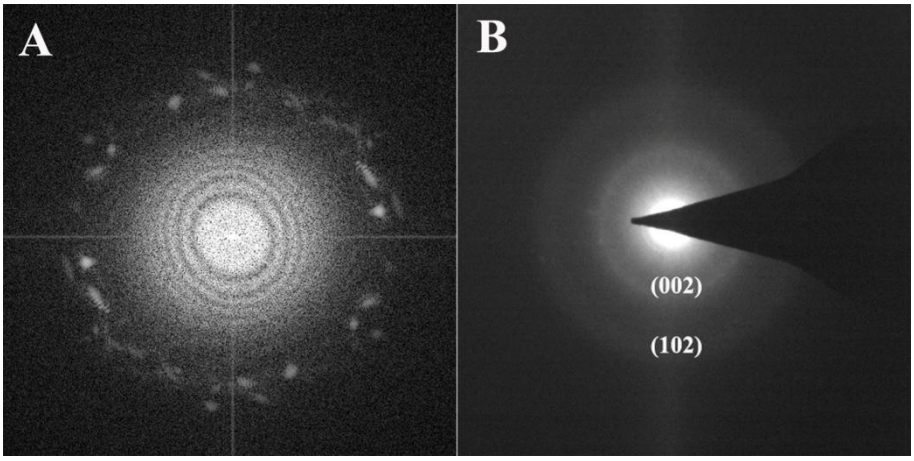

Fig. S2 The SAED patterns of B-CNPs (A) and HGSPs (B).

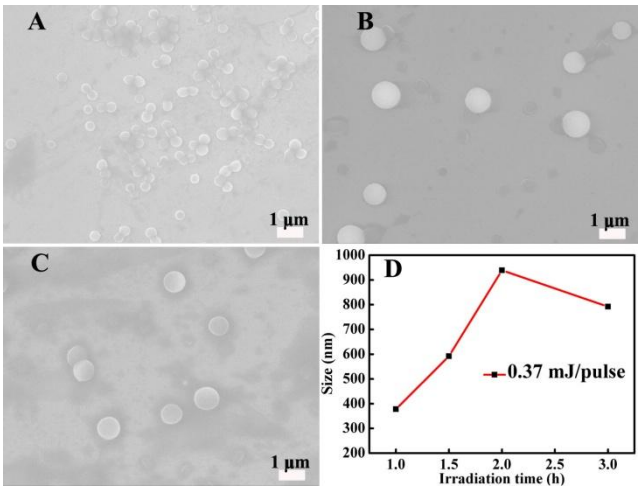

Fig. S3 SEM images of HGSPs produced with pulse energy of 0.37 mJ/pulse for 1 h (A), 2 h (B), 3 h (C) and the corresponding size distributions.

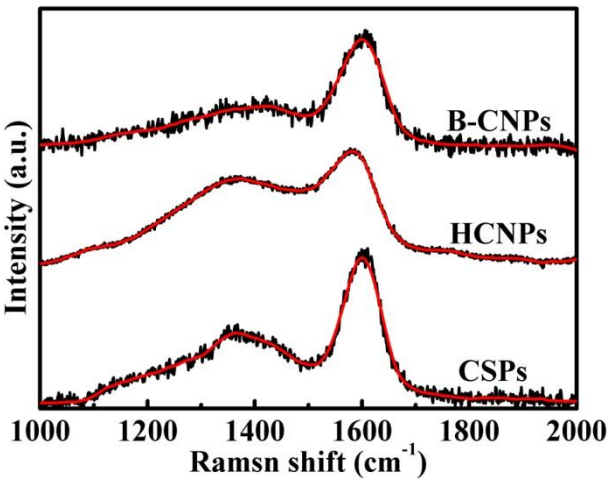

Fig. S4 Raman spectra of B-CNPs, HCNPs, and HGSPs.