

Supporting Information

Fluorescence Quenching in N-doped Graphene Derived from Graphitic Nitrogen

Experimental Section

Synthesis of N-doped graphene

N-doped graphene samples were synthesized in a horizontal quartz tube furnace (GDL(Z)08/44/2, HEFEI RONG KILNSTOVE Co., Ltd, the scheme of the quartz tube furnace shown in Fig.1S). In a typical process, firstly the mixture of dicyandiamide (Aladdin, 99%) and monohydrate glucose (Alfa Aesar, 99%) at a mass ratio X was grinded uniformly in an agate mortar for 30 min and transferred to a ceramic boat, then the boat was placed in the heating zone of the furnace. Secondly the furnace was evacuated to a vacuum of 760 Torr and was purged three times with argon. Then the furnace was heated to 600°C and held for 60 min under an argon flow of 150 sccm at atmospheric pressure, after this it was maintained for the same time at 800°C. Finally the system was cooled naturally to room temperature and the products were collected. The final samples were denoted as NG-X (X=5, 10, 15, 20, 25). As a reference, extra sample was prepared by only heating monohydrate glucose in the same condition and was denoted as UD.

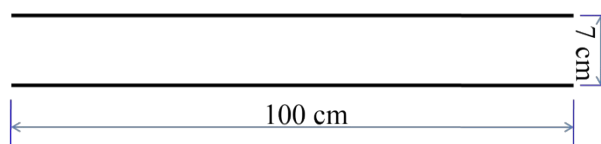


Fig.1S The scheme of the quartz tube furnace.

Characterizations

The transmission electron microscopy (TEM) images were obtained with Hitachi Limited H-600 at accelerating voltages of 100kv.

Raman spectra were record on a Bruker Senterra with a laser wavelength of 532.08 nm at room temperature.

X-ray diffraction (XRD) patterns were recorded by a Bruker D2 diffractometer with Cu K α radiation ($\lambda = 1.54 \text{ \AA}$) at 30 kV, 10 mA .

Fourier transform infrared spectroscopy (FTIR) was run on a Bruker Equinox 55 as pressed KBr pellets.

Elemental analysis was performed on Vario EL III.

X-ray photoelectron spectroscopy (XPS) was performed on Amicus with Mg/Al K α -ray as an excitation source.

Photoluminescence (PL) spectra were acquired in solid phase (all the powder samples were measured without any further treatments) at room temperature with 250 nm line from a Hernia lamp as light laser (Hitachi F-4500, Japan).