Fluorine doped graphene oxide and its application for supercapacitor

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Abstract

Recently, carbon-based materials have been applied to electrodes for energy storage system due to their superior conductivity, low cost, and weight. Many researchers have introduced various methods to synthesize heteroatom-doped graphene or graphitic structures for changing chemical activity, improving wettability, favourable pseudocapacity for electrochemical supercapacitors. Among various elements, fluorine-functionalization or doping is known to be very helpful to change the intrinsic properties of graphene.

Here, we report a facile method to functionalize fluorine doped graphene oxide by plasma treatment under ambient pressure. We also demonstrated that F-doped graphene oxide electrode exhibits enhanced electrochemical performance for supercapacitors resulting from the pseudocapacitance behaviour. Therefore, it is expected that F-doped graphene oxide would be useful for various energy storage systems.

References

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Figures

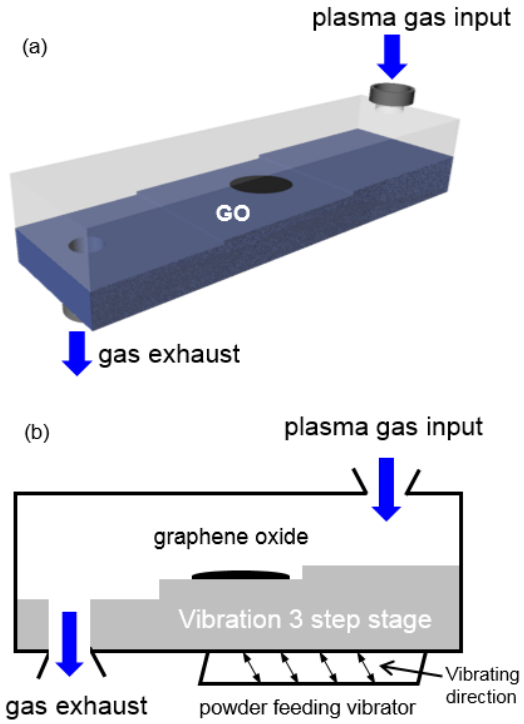

Figure 1: Schematic of F-doped GO fabrication process by dielectric barrier discharge electrode method.

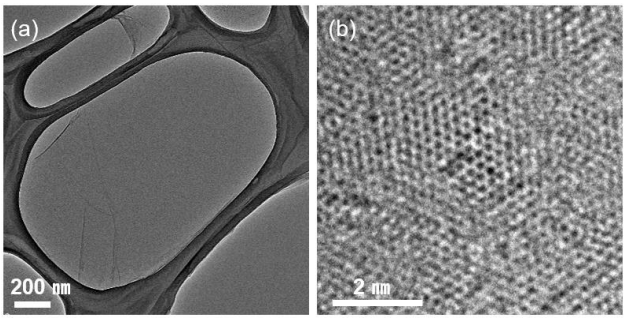

Figure 2: Transmission electron microscopy (TEM) images of F-doped GO on TEM grid. (a)Low-and (b) high resolution TEM images of F-doped graphene on TEM grid.