

**Synthesis of polyaniline in compressed CO<sub>2</sub> and electrochemical properties of polyaniline/reduced graphene oxide hybrid for supercapacitor electrode**

신비오, 김선욱\*, Quoc Minh Pham  
울산대학교  
(swkim@ulsan.ac.kr\*)

Polyaniline has been synthesized through the polymerization of aniline in compressed CO<sub>2</sub> without any template and used as a base material for the preparation of polyaniline/reduced graphene oxide (PANI/rGO) hybrid. The PANI/rGO with a mass ratio of 10:1 was prepared by the reduction of graphene oxide using hydrazine under acidic condition. And the PANI/rGO was used as a supercapacitor electrode in order to show the applicabilities of this hybrid material to energy storage devices. The properties of PANI/rGO hybrid was analyzed using scanning electron microscopy (SEM), thermogravimetric analysis (TGA), x-ray diffraction (XRD) and x-ray photoelectron spectroscopy (XPS) methods. Electrochemical performances of PANI/rGO as a supercapacitor electrode were also evaluated. Cyclic voltammogram (CV) showed excellent redox stabilities at various scan rates. And PANI/rGO hybrid revealed good cycle stabilities even after several thousand cycles and showed high values of specific capacitance.