

**Solid-state functionalization of graphene with amino acids toward
water-dispersity: Implications on a composite with polyaniline and
its characteristics as a supercapacitor electrode material**

Gansukh Erdenedelger,^{a†} Taemin Lee,^{b†} Trung Dung Dao,^{a†} Joon Soo Kim,^c Byeong-Su
Kim,^{*b} Han Mo Jeong^{*a}

*^aDepartment of Chemistry, Energy Harvest-Storage Research Center, University of Ulsan,
Ulsan 680-749, Korea.*

E-mail: hmjeong@mail.ulsan.ac.kr; Tel: +82-52-259-2343

*^bDepartment of Chemistry and Department of Energy Engineering, Ulsan National Institute of
Science and Technology (UNIST), Ulsan 689-798, Korea.*

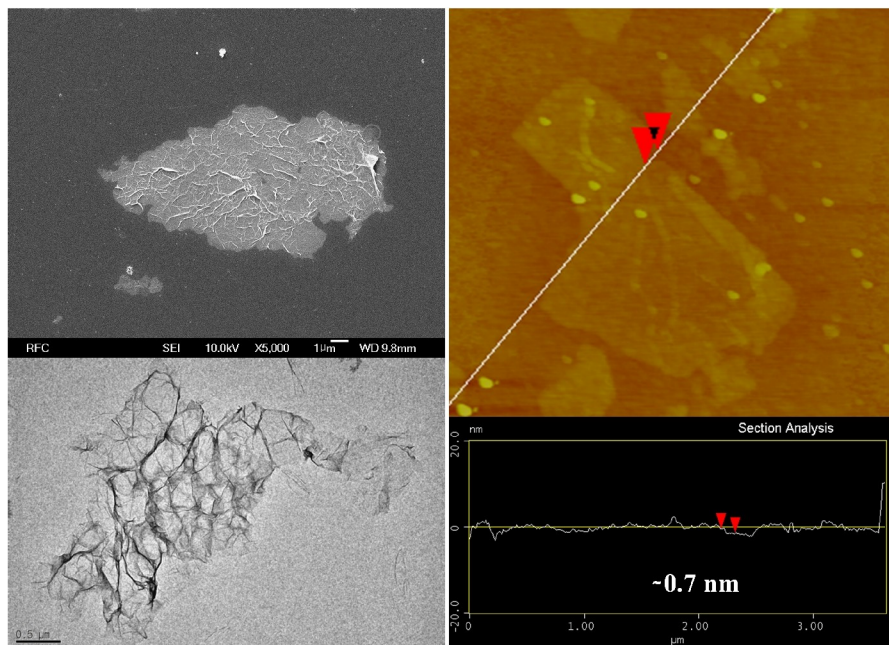
Technology (UNIST), Ulsan 689-798, Korea.

E-mail: bskim19@unist.ac.kr; Tel: +82-52-217-2923

^cKorea Institute of Energy Research (KIER), Daejeon 305-343, Korea.

†These authors contributed equally to this paper.

(a)



(b)

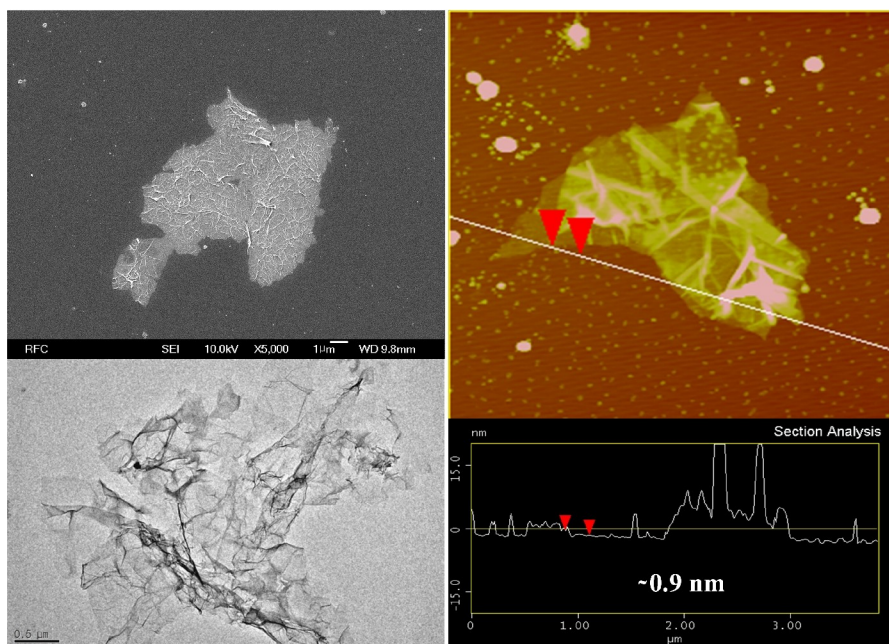


Fig. S1 SEM, TEM, AFM images of (a) TRG and (b) C-TRG

Table S1. List of electrochemical capacitance values of PANI/GO composite electrodes measured with a three-electrode setup from recent literatures

System	Specific Capacitance	Measurement Condition	Reference
<i>Simple mixing</i>	290.2 F/g	Discharge current density at 0.5 A/g	Our study
	210 F/g	Discharge current density at 0.3 A/g	Gaoquan Shi et al, <i>ACS Nano</i> 2010 , 4, 1963
<i>In-situ Polymerization</i>	260 F/g	Discharge current density at 0.5 A/g	Jishan Wu et al, <i>Chem. Mater.</i> 2010 , 22, 1392
	555 F/g	Discharge current density at 0.2 A/g	Zhixiang Wei et al, <i>ACS Nano</i> 2010 , 4, 5019
	640 F/g	Discharge current density at 0.1 A/g	Wei Huang et al, <i>Adv. Funct. Mater.</i> 2011 , 21, 2989
	250 F/g	CV scan rate at 100 mV/s	Jong-Beom Baek et al, <i>ACS Nano</i> 2012 , 6, 1715
	349 F/g	Discharge current density at 0.5 A/g	X. S. Zhao et al, <i>J. Phys. Chem. C</i> 2012 , 116, 5420
	288 F/g	Discharge current density at 1 A/g	H. N. Alshareef et al, <i>Nanoscale</i> , 2013 , 5, 4134
	1024 F/g	CV scan rate at 10 mV/s	SeongChan Jun et al, <i>J. Mater. Chem. A</i> , 2014 , 2, 4989
<i>Electro polymerization</i>	233 F/g	CV scan rate at 20 mV/s	Hui-Ming Cheng et al, <i>ACS Nano</i> 2009 , 3, 1745