

## Facile and Fast Synthesis of Pt Nanoparticles into Graphene-Ionic Liquid Supramolecule for Application of Fuel Cell

최봉길, 정두환<sup>1</sup>, 홍원희\*  
한국과학기술원; <sup>1</sup>한국에너지기술연구원  
(whhong@kaist.ac.kr\*)

Nanohybrids of graphene-ionic liquid (GIL) supramolecules with Pt nanoparticles were prepared by ionic liquid-assisted sonochemical method (ILASM), yielding uniform size (< 10nm) and amount of decoration of Pt nanoparticles into graphene-IL sheets. The remarkable physicochemical properties of GIL enable it to be a promising candidate as a new 2D support to load metal nanoparticles such as Pt for application of fuel cells. The 2D structure of GIL decorated with Pt particles was confirmed by TEM image. The well-designed nanohybrids revealed the elaborate electrochemical activities demonstrated by the oxygen and methanol reduction analysis compared to the graphene-Pt composites. The higher catalytic activity of GIL-Pt than that of graphene-Pt has been attributed to large surface area and low charge transport resistance of GIL-Pt.