

## Carbonized ZIF-8 Nanofiller for PVA Aqueous Electrolytes for Electrical Double-Layer Capacitors

송은호, 박건우<sup>1</sup>, 이재연<sup>1</sup>, 박정태<sup>1,†</sup>  
건국대학교; <sup>1</sup>건국대학교 화학공학과  
(jtpark25@konkuk.ac.kr<sup>†</sup>)

Carbonized Zn-based zeolite imidazolate framework (cZIF-8) nanoparticles were integrated as additives in PVA gel polymer electrolytes for application of EDLC. cZIF-8s nanoparticles are prepared by carbonization of ZIF-8 powder at two temperature conditions (600 °C and 700 °C). The acid treatment was subsequently conducted for get rid of Zn ion. Gel polymer electrolytes had disadvantage of low ionic conductivity due to high crystallinity of PVA polymer chains which can be obstacle for ion transfer in electrolytes. In this work, cZIF-8 nanofillers were added in PVA gel polymer electrolytes to reduce the degree of crystallinity of the PVA polymer electrolytes. With the addition of cZIF-8 nanoparticles, polymer chains avoid recrystallization of each other and increase amorphous properties, prone to improve ionic conductivity. The enhancement of ionic conductivity was closely found to correlate with improvement of device performance. All prepared samples were characterized using different techniques such as X-ray diffraction (XRD), Fourier transform infrared spectroscopy (FTIR) and field emission scanning electron microscopy (FE-SEM).