Introducing Functional Dopants into Conducting Polymers: for Next Generation Energy & Biotechnologies

송현곤*
UNIST (울산과학기술대학교) 에너지공학부
(philiphobi@unist.ac.kr*)

The method of "incorporation of functional dopants into conducting polymers" is introduced as the strategy to add functionality to electrodes or materials for biofuel cells, flexible polymer batteries, electrochromic devices and even biomaterials for nerve regeneration. Doping is the essential process to make conducting polymers conductive by generating intermediate energy states between valence and conduction bands of the polymers. During chemical polymerization using oxidizing agents or electrochemical polymerization to anodize monomers, cationic charges that develops in conducting polymers require an influx of anionic dopants from the electrolyte to maintain charge neutrality. Functional molecules to have characteristic properties such as electroactivity and electrochromism were used as dopants to add extra functionality to conducting polymers.