

Polypyrrole/Poly(vinylidene chloride-co-acrylonitrile) Solid State Gel Electrolyte  
for Iodine-Free Dye-Sensitized Solar Cells

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Here, we presented a solid state gel electrolyte as an alternative to the liquid electrolytes used in dye sensitized solar cells (DSSCs) because the use of liquid electrolyte raises significant technological problems associated with device sealing, long-term stability and corrosive I<sub>2</sub>. The first solid state gel electrolyte was prepared by using the propylene carbonate (PC) as the solvent, doped polypyrrole (PPy) as the hole-conducting polymer. Then, we introduced block copolymer of poly(vinylidene chloride-co-acrylonitrile) (PVDC-AN) with low transition temperature into a PC-PPy system to change liquid electrolyte into the gel electrolyte. The chlorine, which is present in PVDC-AN has the largest electronegativity, which could be expected to improve the ionic transport, thus enhancing the performance of DSSCs.