

Thermally cross-linked polymer electrolytes for flexible electrochromic device application

박현정, 이지현, 강문성<sup>†</sup>

상명대학교

(solar@smu.ac.kr<sup>†</sup>)

An electrochromic device (ECD) is a device in which reversible oxidation and reduction reactions occur in electrochromic materials as potential is applied, and the optical properties change at a low voltage. In particular, flexible ECD using a polymer substrate has the advantage of being light and bendable and thus has a wider application range. Meanwhile, the electrolyte used for flexible ECD should possess high thermal and chemical stability and strong adhesion to prevent undesirable delamination of electrode films. Therefore, in this study, a thermal cross-linking type polymer electrolyte was developed for flexible ECD application. The properties of the polymer electrolyte were optimized by introducing moieties that can determine adhesion, transparency, and ionic conductivity in an appropriate ratio. As a result, it was confirmed that the prepared polymer electrolyte possesses excellent electrochemical performance and high thermal stability and can be successfully applied for fabricating flexible ECDs. This research was supported in part by 2021 Green Convergence Professional Manpower Training Program of the KEITI and by the MEST (NRF-2019R1A2C1089286).