

Development of polymer gel electrolytes for facile fabrication of efficient and durable electrochromic devices

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Polymer gel electrolytes (PGEs) have been widely investigated and used in various electrochemical applications such as lithium secondary batteries and dye-sensitized solar cells because they possess moderate ion conductivity and high physical stability. They have also been developed for the application to electrochromic devices (ECDs). Recently, ECDs have been attracting much attention owing to their use as a smart window. The PGEs as one of the main components of the ECDs can dominate the major characteristics of transmittance and colored time etc. Especially, the ion conductivity and volatility of the PGEs should be optimized for the fabrication of efficient and durable ECDs. In addition, efficient injection process of highly viscous PGEs during the fabrication of large area ECDs should also be considered. In this work, therefore, we have developed the PGEs which can be easily loaded as a film and then in-situ polymerized through UV irradiation. This work was supported by a grant (RE201702218) from the Environmental Industry Advancement Technology Development Project of Korea Environmental Industry & Technology (KEITI) funded by Korea Ministry of Environment (MOE).