

Photovoltaic properties of quasi-solid state
dye-sensitized solar cells using polymer electrolyte
adding liquid electrolyte

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The addition of the liquid electrolyte to polymer electrolyte based on poly(ethylene-co-methyl acrylate), LiI, and I₂ by 'casting-injection method' increased the ionic conductivity due to the good interfacial contact between polymer electrolyte and dye molecule, which result in increased cell efficiency. The polymer electrolyte adding liquid electrolyte exhibited the conductivity of $9.33 \times 10^{-3} \text{ Scm}^{-1}$ (at room temperature), higher than the polymer electrolyte without liquid electrolyte. A quasi solid-state dye-sensitized solar cell employing the polymer electrolyte with liquid electrolyte gives an open-circuit voltage of 0.68 V, a short-circuit current of 3.19 mAcm^{-2} and an energy conversion efficiency of 2.2 % under light intensity of 45 mWcm^{-2} . These result shows that ionic conductivity and cell efficiency can be improved by 'casting-injection method' used in this study.