

Zeolite-XF12 electrolytes applied to semi-solid state dye-sensitized solar cells (SSDSSCs)

이수연, 임정민, 조상혁, 박정태[†]

건국대학교

(jtpark25@konkuk.ac.kr[†])

Zeolite-X and A were synthesized from non-magnetic fly ash treated in acetic acid, and were applicable to gel electrolyte for semi-solid state dye-sensitized solar cells (SSDSSCs). The characteristics of Zeolite-X and A were analyzed using BET, SEM, EDS, and XRD. The fabricated SSDSSCs grounded on the Zeolite-X and A electrolyte were identified by UV-Visible spectroscopy, EIS, and IMPS-IMVS. The SSDSSC using Zeolite-XF12 electrolyte exhibited the total energy conversion efficiency (6.0%), and it was much higher than other materials like Zeolite-XF7(5.0%), Zeolite-X&AF (4.8%), and nano-gel electrolyte (3.8%). Due to the effective light collection characteristics of semi-solid state electrolyte, decrease of resistance in the interface between photoanode and electrolyte, and the deterioration in charge recombination, the performance of Zeolite-XF12 improved.