

Ordered mesoporous metal of the $\text{TiO}_2 / \text{SnO}_2$ was synthesized to improve the passability of current

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In this study, we have successfully synthesized ordered mesoporous $\text{SnO}_2/\text{TiO}_2$ with three-dimensional bicontinuous cubic structure, high surface area and crystalline frameworks by using a facile solvent-free infiltration method from a mesoporous silica template of KIT-6. Then employed it as electrode in dye-sensitized solar cells. On the basis of the investigation of the XRD pattern, nitrogen adsorption (BET), dye adsorption, UV-vis diffuse reflectance spectroscopy, dark current, current-voltage (I-V) characteristics and electrochemical impedance spectra (EIS), it was found that when the Ti-content is 20wt%, the energy-conversion efficiency meso- $\text{SnO}_2/\text{TiO}_2$ is significantly best, by about 1.95%. And it is mainly the result of TiO_2 particles on mesoporous SnO_2 electrode inhibited electron recombination caused by passivation of reactive surface states and increased the light scattering, leading to greatly improvement in the open-circuit voltage, short-circuit current, and fill factor.