

13th International Conference on

Electrochemistry

May 27-28, 2019 | Barcelona, Spain

Controllable preparation and application of squaraine containing nanometer hybrids with broad band absorption to near infrared by one step method

Nahla Omer, Fayin zhang, Gang Zhao, ShanyiGuang*, Elwathig AM Hassan, and Hongyao Xu*
Donghua University, China

Nowadays organic dyes materials have been receiving more interested in solar cell due to improved solution process ability, scalable synthesis, tunable chemical and physical properties via molecular design and low cost. However, the thermal stability, compatibility and aggregation of squaraine dye limited broad application. In this study, octavinyl-polyhedral oligomeric silsesquioxane OV-POSS has used to prevent all these problems. These is the first time designed a novel hybrids large broad absorption ultra violet to near infrared transient absorption spectroscopy, prepared by OV-POSS with 6-Bromoquanaldine and Squaric acid (semisquaraine (SSQ), squaraine (SQ)). The systems were characterized by Fourier Transform Infrared Spectroscopy FTIR, ¹HNMR, TGA, UV-Vis-Spectra, FE-SEM and DSC properties, and when a combination our system dyes with N719 as co-sensitization in photovoltaic performance using Ti foil-based solar cell DSSC the co-sensitization promote their light properties in our result due to the a broad spectral coverage in a big region from 400 to 800 nm. And showed the highest properties short circuit current density JSC of 20.09 mA cm⁻² an open circuit voltage VOC of 0.74 V, fill factor FF 52.17% and power conversion efficiency PCE 7.73%, so exhibited good performance.