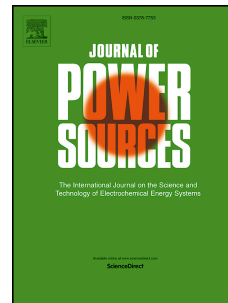


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# A New Polymer Electrolyte for Solid-State Quantum Dot Sensitized Solar Cells

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**Abstract:** Liquid electrolytes in quantum dot sensitized solar cells (QDSSCs) cause device packaging and stability issues, and in this work a new type of solid-state electrolyte based on PEO-PVDF polymer blends with S/tetramethylammonium sulfate (S/TMAS) redox additive is investigated. UV-Vis and ionic conductivity measurements are performed to characterize the electrolytes' optical and electrochemical properties. QDSSCs are fabricated using the polymer electrolytes, and a possible additional redox process in the cells is proposed. The study shows that the PEO-PVDF polymer electrolyte with the S/TMAS redox additive can improve the solar cell incident photon-to-current conversion efficiency and stability. This research could shed light on the study of novel solid-state QDSSCs based on polymer electrolytes with further enhanced performance.

**Keywords:** Polymer Electrolyte, Redox Couple, Solar Cells, Stability

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