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## **Dye sensitized solar cells fabricated with polymer free quasi solid state (gel) electrolyte**

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Dye Sensitized solar cells (DSSCs) are cheaper alternatives to the conventional silicon solar cells. In general DSSCs comprises an electrode consisting of a nanocrystalline titanium dioxide (TiO<sub>2</sub>) films modified with a dye, a platinum counter electrode and an electrolyte solution in between the electrodes. Replacement of liquid electrolyte by and electrolyte in quasi solid state helps to overcome many problems occurs in dye sensitized solar cells such as lack of long term stability due to liquid leakage, usage of volatile liquids, electrode corrosion and photodecomposition of the dye in the solvent medium. In this study we report results obtained on Quasi solid state electrolyte system composed of ethylene carbonate (EC) and propylene carbonate (PC) as plasticizers, Iodine and Potassium Iodide (KI) as redox species, and fumed silica as the polymer less gelling agent. Short circuit photocurrent density of 7.83 mA cm<sup>-2</sup>, an open circuit voltage of 665 mV, a fill factor of 63.3%, and an overall efficiency of 3.30% was observed under simulated sunlight of 100mW cm<sup>-2</sup> on fabricated dye sensitizes solar cell in configuration of FTO/TiO<sub>2</sub> electrode/ Ruthenium dye (N719)/potassium iodide, Iodine polymer less quasi solid state electrolyte/Pt/FTO.

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