
Abstract

PCE-10, PCE-12 and PIDT-BT are good donor materials for solar cells and catalyst for hydrogen production by water splitting. I have checked out the effect of aggregation and NPs form on the optoelectronic properties of these materials by varying the solvent and solvent ratio. Formation of aggregates and NPs results in a red shift for above these polymers and decrease in bandgap. But they were unstable and start to decompose in sunlight due to oxidation. Their stability was studied by changing the solvent ratio and NPs were made stable by use of stabilizing agent SDS. Polymeric chains were successfully stabilized in NPs form and solvent ration was found which give maximum stability to these chains. ZnO NPs were used with these polymers which act as an electron acceptor material and gave extra stability to the polymers by blocking sites of oxidation.