DNA-ENHANCED DYE-SENSITIZED SOLAR CELLS

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Dye-sensitized solar cells (DSSCs) are a promising alternative to the current silicon solar cell technologies. DSSCs have a lower manufacturing cost, can be made to be flexible, semi-transparent, and in any variety of colors for aesthetic applications. Despite these advantageous properties, the stability and power conversion efficiency of DSSCs are still lacking. Recently, we have shown that the adsorption of DNA onto the semiconductor surface of a typical DSSC improves its overall performance. Structure-function analysis, in conjunction with steady-state and time-resolved spectroscopic studies, are currently being done to understand this phenomenon and to uncover the mechanism by which DNA boosts the overall performance of DSSCs. This new knowledge is expected to facilitate the rational design of DSSCs that exhibit higher power conversion efficiency than those currently available.