

DNA influence on the photovoltaic performance of dye sensitized solar cells with polymeric gel electrolyte.

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The effects of deoxyribonucleic acid (DNA), as a surface modifier, on the TiO₂ layer of dye-sensitized solar cells were investigated. The presence of DNA on the nanoporous TiO₂ film enhanced the photocurrent of the device based on a polymeric gel electrolyte. This is strong evidence that DNA molecules may have improved charge injection into the conduction band of the semiconductor due to its strong electrostatic interaction with the TiO₂ nanoparticles, reducing dye aggregate formation. However, there were no significant differences in open circuit voltage (V_{oc}) between the devices made with and without DNA, suggesting no charge recombination processes were altered.

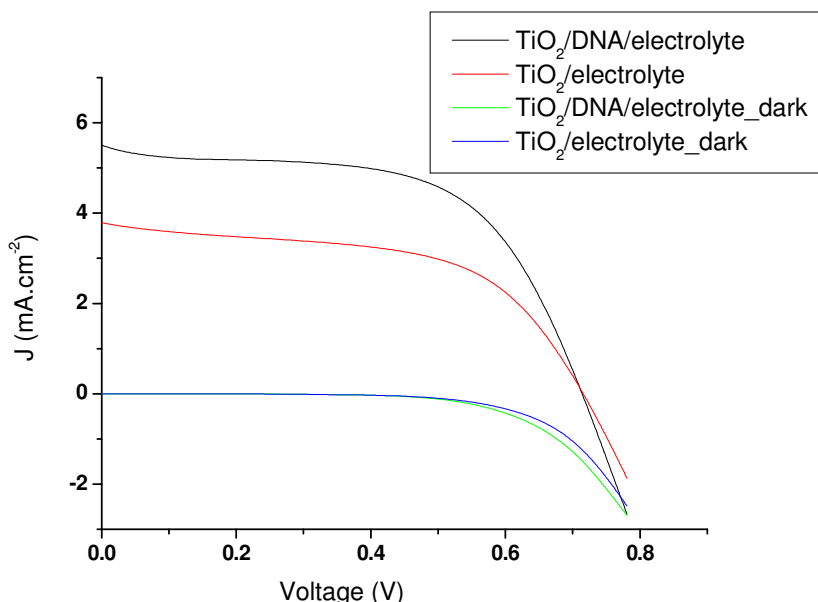


Figure 1: IV curves for dye-sensitized solar cells made with and without DNA obtained in dark and under 100 mW cm⁻² illumination intensity.

Keywords: deoxyribonucleic acid, polymeric gel electrolyte, dye-sensitized solar cells

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