

# Synthesis of heteoatom-doped carbon nanostructures for energy conversion applications

D. Tasis\*, A. Ploumistos

*Department of Chemistry, University of Ioannina, 45110 Ioannina, Greece*

P. Lianos

*Department of Chem. Engineering, University of Patras, 26500 Patras, Greece*

An efficient electrocatalyst for Pt-free  $I^-/I_3^-$  reduction has been synthesized by high temperature treatment of graphene oxide-cobalt phthalocyanine mixtures. The graphitic material was characterized by various techniques and was found to consist of reduced graphene oxide carrying  $CoN_3$  entities, obtained by thermal decomposition of cobalt phthalocyanine. It was subsequently deposited as thin film on FTO electrodes, which were employed as counter electrodes for dye-sensitized solar cells. When it was finally employed for the construction of solar cells, it demonstrated full capacity to substitute standard Pt electrocatalyst verifying that the construction of Pt-free dye-sensitized solar cells is feasible. [1]

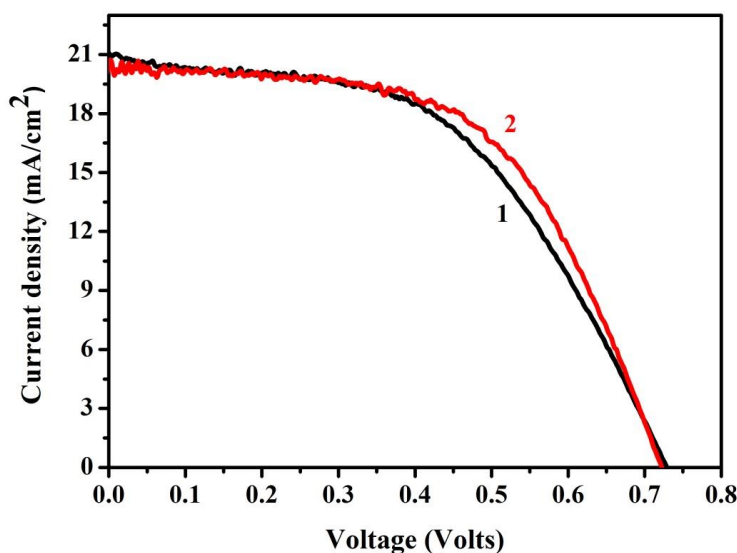


Figure 1: Current density-voltage curves obtained with DSSCs made with different counter electrodes: (1) RGO/CoPc and (2) Pt.

## References

[1] M. Belekoukia et al., *Solar Energy Materials & Solar Cells*, **2016**, in press.

---

\* dtassis@cc.uoi.gr