

# Optical and Photo-Electrochemical Properties of Conducting Polymer/Inorganic Semiconductor Nanoparticle

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**Abstract:** Optical and photoelectrochemical properties of polybithiophene Poly(bTh) films electrochemically synthesized and modified with incorporation of silicon nanoparticles (n-Si or p-Si) dispersed in the electrolytic during polymerization were studied. The characterisation of these modified surface electrodes by Poly(bTh)+n-Si or Poly(bTh)+p-Si, was carried out by using the photocurrent measurements and UV-visible spectroscopy. Cyclic voltammetry (CV) and electrochemical impedance spectroscopy (EIS) have been used to investigate the electrochemical behaviour of the resulting materials. The results show that the photosensitive composite materials have good photoelectrochemical and optical properties, and it can be used as material for the photovoltaic cells applications.

**Keywords :** Organic-inorganic composite, polybithiophene, Silicon, electroactivity, photoelectrochemistry.