

# Eletr deposição de óxidos nanoestruturados para aplicação como fotoeletrodos

## Electrodeposition preparation of nanostructured oxides for application as photoelectrodes

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**Resumo:** Thin films of nanostructured oxides are the key materials in various electronic and optical devices that are essential in modern human life. In particular, those materials have been extensively investigated for use converting light to energy due to their optical properties, stability and relatively low cost. Semiconductor metal oxide can be designed to have a functionality that results from properties of their constituent phases. Cathodic electrodeposition has been proposed as an alternative route for the production of oxide coatings. Some technological advantages for this method can be pointed out as simplicity and economy, control on film thickness, uniformity and deposition rate and deposition on substrates of complex shape. Cathodic electrodeposition of bismuth oxide ( $\text{Bi}_2\text{O}_3$ ) and zinc oxide ( $\text{ZnO}$ ) thin films has been studied with the aim of developing cost-effective alternative routes to the photoelectrode materials. The electrodes have been physically and chemically characterized. Finally, the use of these new materials for photoelectrocatalysis is illustrated with examples from organic dye discoloration using visible and UV radiation.

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