On the Photocatalytic Performance of Indium Tantalate and its Modifications

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The photocatalytic activity of InTaO$_4$ has been studied regarding the effect of a substitution of In by Ni, of the performance of NiO as well as Ag$_2$O as co-catalysts, and especially of the products of different methods of preparation (solid state reaction and/or sol-gel process) and their particle sizes. Solid state reactions and sol-gel procedures were used to synthesise different products for the catalytic reaction in a reactor vessel equipped with a mercury UV lamp. The optical properties and the band gap values of the different products were evaluated by reflectance spectroscopy, and the microstructure parameters of the crystalline products were determined by an elaborate profile analysis of the X-ray diagrams. The evolution of H$_2$ and O$_2$ under irradiation was quantified by a GC setup. The causes for the deviations of the performance of these catalysts from the values reported elsewhere are discussed.

Key words: Photocatalysis, Indium Tantalate, Factors for Catalytic Efficiency, Preparation Strategies