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Synthesis and Characterisation of Ag/Cu co-doped nano TiO₂

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Abstract content
 (Max 300 words)

Among many oxides that have a suitable band gap for photocatalysis, titanium dioxide (TiO₂) has been the focus of recent attention due to its superior properties such as being environmentally compatible, chemically stable and less expensive. It has recently been found that co-doping with suitable amounts of more than one type of metals further improves the photocatalytic properties of titanium oxide [1].

In the present study, two co-dopants (Ag and Cu) have been introduced in TiO₂ following the standard sol gel methods. Structural characterization was carried out using X-ray diffraction (XRD) and Raman Spectroscopy and surface studies by Scanning Electron Microscope (SEM) and SEM incorporated Energy Dispersive Spectroscopy (EDS). Optical properties were studied using the UV-Vis spectroscopy. The results of the lattice parameter calculations from the XRD patterns of metal loaded titanium dioxide are almost the same as for the undoped. Ag dopant alone did not affect the anatase to rutile transformation whereas, Cu resulted in a lower transformation temperature. Co-doping (Ag/Cu) further reduced the transformation temperature.

References

[1] V Stengl, S Bakardjieva and J Bludska, J. Mater. Sci. (2011) 46:3523

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