

Synthesis and characterization of new antimony-oxide based photocatalysts

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Heterogeneous photocatalysis is a hot topic in many field of science. To improve the activity of these materials the efficient charge carrier generation is a vital step. V-VI-VII group multicomponent semiconductors such as BiOX (X = Cl, Br, I) or SbOX¹ are popular photocatalysts.

The present study deals with the preparation of antimony-oxide based microstructures (oxihalogenide) by two different – precipitation and solvothermal – routes. The as-prepared materials were characterized by scanning electronmicroscopy (SEM), diffuse reflection UV-Vis spectroscopy (DR-UV-Vis), X-ray diffractometry (XRD) and several thermoanalytical methods such as TGA/DTG, DSC and TG-MS.

To prepare visible light active heterojunction containing photocatalysts graphitic carbonitride (g-C₃N₄) was used as photosensitizer. The heterostructures were tested in organic dye (methyl orange) decomposition reactions under visible light irradiation.

¹ B. Buchholcz, H. Haspel, B. Tamás, Á. Kukovecz and Z. Kónya, CrystEngComm, 2017, 19, 1408