**Bi5O7I Nanosheets Supported on Chitosan for Organic Dyes photo-degradation and 4-Nitrophenol Reduction**

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**Abstract**

Water pollution appears to be one of the greatest challenges the humane society is currently facing [1]. Here, we report the preparation of a new hybrid material based on Bi5O7I supported on chitosan and its application in organic dye photo-degradation and 4-Nitrophenol reduction. The composition, structure and morphology of the obtained hybrid materials were investigated using SEM, EDS, Uv-Vis DRS, XRD, FTIR and Raman spectroscopy. Photocatalytic experiments revealed that these materials have an excellent photocatalytic for degradation of methyl orange in aqueous media. Moreover, the materials showed a good performance in 4-nitrrophenol reduction using NaBH4 as reducing agent. More importantly, the photocatalysts could easily be recovered by simple filtration with no significant loss of their activity after many successive runs.

**Keywords:** Water pollution, Photocatalytic, Degradation, Bi5O7I Nanosheets, Chitosan, methyl orange, 4-nitrophenol, Adsorption, Reusability.

**[1]** Schwarzenbach, René P., Thomas Egli, Thomas B. Hofstetter, Urs Von Gunten, and Bernhard Wehrli. "Global water pollution and human health." Annual review of environment and resources 35 (2010): 109-136. <https://doi.org/10.1146/annurev-environ-100809-125342>