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Experimental study on shock-induced doping of titania photocatalysts XIANG GAO, National Key Laboratory Explosion and Safety Science, Beijing Institute of Technology, Beijing 100081, China, JIANJUN LIU, Faculty of Science, Beijing University of Chemical Technology, Beijing 100029, China, PENGWAN CHEN, National Key Laboratory Explosion and Safety Science, Beijing Institute of Technology, Beijing 100081, China — Titania is a most effective photofunctional material and is widely used. But since the band gap of titania is large (Eg=3.2 eV), it is only active in the ultraviolet region, which accouts only 3%-5% of the overall solar intensity. Therefore, it is very important to enhance the visible light activity of the titania photocatalyst. In this study, the nitrogen-doping of titania photocatalysts were induced by shock waves, which were generated through detonation-driven flyer impact. The samples were shocked at different flyer impact velocities and recovered successfully. Two nitrogen resources containing hexamethylene tetramine(HMT) and dicyandiamide were considered. The phase composition, light absorption spectra and N doping status of the recovered samples under different shock conditions were characterized. The absorption edge of the N-doped titania photocatalysts by shock wave was extended to 450nm corresponding to visible light region. The photocatalytic degradation to rhodamine B of the samples doped with dicyandiamide increased with the increase of the flyer velocity due to the higher N doping concentration and wider response to visible light.

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