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**N-doped TiO<sub>2</sub> Prepared by RF DBD Plasma** ZHI-GUANG SUN, JING-LIN LIU, XIAO-SONG LI, ZHAO-JUN ZHAI, AI-MIN ZHU, Dalian University of Technology, LABORATORY OF PLASMA PHYSICAL CHEMISTRY TEAM — TiO<sub>2</sub> is the most promising photocatalyst because of its chemical stable, nontoxic, low cost, high photocatalytic activity and other attractive properties. Anatase has the highest photocatalytic activity among the three crystal forms of TiO<sub>2</sub>. However, the 3.2 eV bandgap of anatase TiO<sub>2</sub> makes it can only utilize the ultraviolet part of solar spectrum. Nitrogen doping is an effective method to extend the absorption range of anatase to visible light. N-doped TiO<sub>2</sub> preparation methods, such as heat treatment under NH<sub>3</sub> flow, the hydrolytic precipitation and the sol-gel process, have been reported. In this work, preparation of N-doped TiO<sub>2</sub> was explored by radio-frequency (RF) dielectric barrier discharge (DBD) plasma using Ar as discharge gas. TiCl<sub>4</sub>, O<sub>2</sub> and N<sub>2</sub> were used as Ti, O and N precursors, respectively. In addition, H<sub>2</sub> was added to the plasma. X-ray photoelectron spectra (XPS) showed nitrogen was successfully doped into the as-prepared TiO<sub>2</sub>. Further investigations on structure, composition and optical property of the as-prepared TiO<sub>2</sub> samples were conducted by X-ray diffraction (XRD), Fourier-transform infrared (FT-IR) and UV-Vis absorption spectra techniques.

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