TiO_2 Particle Coating on Dielectric Materials by Sol-Gel Method and Its Application to NO and SO_2 Removal in Dielectric Barrier Discharge - Photocatalysts Hybrid System

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The dielectric barrier discharge process combined with TiO2 photocatalyst was applied to remove NO and SO2. The dielectric barrier discharge reactor was packed with glass beads as a dielectric material and the glass beads were coated with TiO2 particles prepared by sol-gel method. The quality of TiO2 thin film was examined by SEM depending on number of coatings. The TiO2 thin film dip-coated 1 time into the solution of TiO2 prepared by the sol-gel method was the most uniform and efficient for NO and SO2 removal by dielectric barrier discharge - photocatalysts hybrid system. The increase in applied peak voltage enhances the NO and SO2 removal efficiencies. The NO and SO2 removal efficiencies decrease as the initial NO and SO2 concentrations increase.