

Photoelectrocatalysis Performance of La_2O_3 Doped TiO_2/Ti Electrode in Degradation of Rhodamine B Organic Compound

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Abstract : Photoelectrocatalytic degradation towards rhodamin B (RhB) organic compound has been conducted by using Lanthanum Oxide (La_2O_3) doped TiO_2/Ti as the working electrode compared to the TiO_2/Ti electrode. The preparation of the La_2O_3 doped TiO_2/Ti working electrode was conducted by using electrodeposition method and TiO_2/Ti was prepared using anodizing method to compare the data related to the activity of the electrodes. The result shows that during fabrication process of La_2O_3 doped TiO_2/Ti electrode the concentration of 0.05 mol/L ion La^{3+} with 10 minutes of doping period caused fine RhB degradation activity from each methods of photodegradation (PD), electrochemistry (EC), photocatalytic (PC), and photoelectrocatalytic (PEC). The optimum condition shows the La_2O_3 doped TiO_2/Ti electrode provided efficient degradation activity of RhB under PEC method by 98.04% compared to the others, while TiO_2/Ti electrode reaches 45.42%.

Key words: photoelectrocatalytic degradation, rhodamin B, La_2O_3 , TiO_2/Ti .

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