The Modification Mechanism of Lanthanum Doping in Ti/Sb-SnO₂ Electrode and its Electrocatalytic Behavior of Degradation of *p*-nitrophenol

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Element doping is one of the effective means to improve the electrochemical performance of electrode. In order to improve the electrocatalytic performance of Ti/Sb-SnO₂ electrode, lanthanum was selected as a promoter to dop in the electrode coating. The micrograph and the structure of the electrode were characterized by SEM and XRD. Element composition of catalyst layer was determined by EDS. The electrochemical performance of Ti/Sb-SnO₂-La electrode was detected by electrochemical workstation. Doped and undoped electrodes were used to treat simulated *p*-nitrophenol (*p*-NP) wastewater. The electrochemical degradation efficiency of the two electrodes for treating *p*-NP was compared. The results showed that 92.8% *p*-NP was removed when using Ti/Sb-SnO₂-La as anode, which is much higher than that when using Ti/Sb-SnO₂ as anode. The effect of electrolytic parameters (electrolytic voltage, applied voltage, electrode distance, electrolyte concentration and pH value) on *p*-NP degradation were also studied. On the basis of electric catalytic oxidation mechanism, the degradation mechanism of *p*-NP was deduced. According to the experimental results, the electrocatalytic performance of the La doped electrode was superior for the treatment of *p*-NP wastewater.

Keywords: Ti/Sb-SnO₂-La electrode, electrocatalytic, rare earths, *p*-NP wastewater

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