Novel and Promising Preparation of an Efficient Hematite Photoanode for Oxygen Evolution Reaction

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Iron(III) oxide (Fe_2O_3) has been recognized as a photoanode capable of water oxidation to dioxygen. For producing the efficient performance of Fe_2O_3 photoanode, the short-range diffusion of hole carriers and the ease of carrier recombination are the issues to be solved. Herein, a promising fabrication method for the preparation of an efficient $\alpha\text{-Fe}_2\text{O}_3$ photoanode is presented. When $\alpha\text{-Fe}_2\text{O}_3$ was subjected to acid treatment followed by loading of a co-catalyst, mix-valence cobalt(II,III) oxide (Co_3O_4), the double-treated Fe_2O_3 was superior to the untreated and acid-treated materials.

Keywords: Hematite; acid treatment; Co_3O_4 ; water oxidation; O_2 evolution

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