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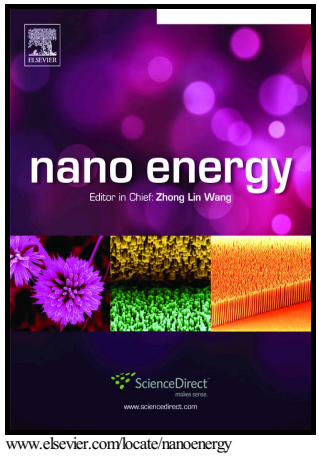

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ABSTRACT

Developing effective ways to promote the sluggish oxygen evolution reaction (OER) still remains a great challenge due to the interdependence multiple steps procedure. Herein, we design a two action sites strategy to break interdependence restriction to reduce the calculative overpotential. Density functional theory demonstrated that the introduced oxygen vacancies could accelerate the oxidation of H_2O by induced an extra reaction step, corresponding deprotonation of H_2O* decomposed into two separated reaction steps: $H_2O^* \leftrightarrow (HO + H)^*$ and $(HO + H)^* \leftrightarrow HO^* + H^+ + e^-$. Meanwhile, experimental observations confirm that two action sites promote the Vo-CoOOH OER performance including a lower onset potential, a lower Tafel slope and an incremental Turnover frequency (TOF) from

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