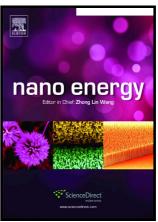
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Designing of stable and highly efficient ordered Pt₂CoNi ternary alloy electrocatalyst: The origin of dioxygen reduction activity

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Abstract

We report an ordered Pt₂CoNi ternary alloy nanoelectrocatalyst, synthesized via simple molten salt synthesis (MSS) procedure and also defined theoretically a new descriptor to explain the origin of exceptional oxygen reduction reaction (ORR) activity. The catalyst consists of a very thin layer of carbon, since the seed-growth of such ordered Pt₂CoNi nanoelectrocatalyst has been originated through the pores of high surface area carbon during a MSS. Electrocatalytic ORR activity of Pt₂CoNi nanoelectrocatalyst is 5-6 times higher than that of commercial Pt/C catalyst with fascinating stability behavior in acidic media. Most interesting behavior of this Pt₂CoNi has been observed after 15,000 and 25,000 durability cycles, where 16 times activity enhancement is achieved at 0.9 V. Furthermore, after 25,000 cycles, a specific activity of 0.605 mA/cm²_{Pt} (22

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