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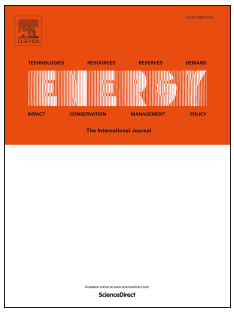

Sm_2O_3 embedded in nitrogen doped carbon with mosaic structure: An effective catalyst for oxygen reduction reaction

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Sm_2O_3 embedded in nitrogen doped carbon with mosaic structure: an effective catalyst for oxygen reduction reaction

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Abstract:

Exploring non Pt-based catalysts with high ORR performance still remains a great challenge in the development of energy conversion and storage devices. The aim of this study is preparing a novel ORR catalyst **(**Sm_2O_3 embedded in nitrogen doped carbon by calcination processes, named as Sm_2O_3-CN-1100**)** to substitute Pt catalysts. And the results of this study show that Sm_2O_3-CN-1100 displays good electrocatalytic activity towards ORR, with high stability, strong tolerance to methanol crossover, and a quasi 4-electron transfer process, making it a promising Pt alternative ORR catalyst. The satisfactory ORR performance would result from the mosaic structure of Sm_2O_3 embedded in nitrogen doped carbon layer and the strong coupling effect between Sm_2O_3 and nitrogen doped carbon.

Key words: Sm_2O_3; Polyaniline; Nitrogen doped carbon; Mosaic structure; Oxygen reduction reaction

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