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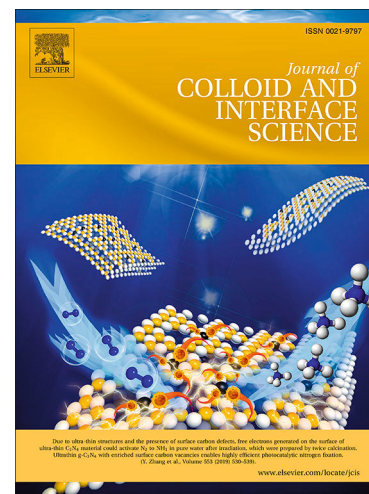
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Ultrathin cobalt pyrophosphate nanosheets with different thicknesses for Zn-air batteries

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Abstract

Two dimensional (2D) ultrathin nonprecious metal based catalysts show excellent electrocatalytic activities, due to the larger surface areas, more catalytic sites and more interconnected electron-transfer access than their bulk counterparts. Here, we synthesized cobalt pyrophosphate ($\text{Co}_2\text{P}_2\text{O}_7$) nanosheets with different thickness by a simple and efficient one-step hydrothermal process. The catalytic performance of the obtained $\text{Co}_2\text{P}_2\text{O}_7$ was investigated via diverse electrochemical measurement. Due to the unique 2D structure and the flexible coordination of pyrophosphate group, the as-prepared $\text{Co}_2\text{P}_2\text{O}_7$ catalyst had excellent electrocatalytic performance and good stability, which could rank among the most active nonprecious metal catalysts for oxygen evolution reaction and oxygen reduction reaction. In addition, the ultrathin $\text{Co}_2\text{P}_2\text{O}_7$ nanosheets exhibited good performance as the air cathode catalyst for zinc air batteries.

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