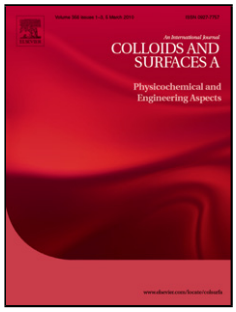

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Synthesis of One-Dimensional RuO_2 Nanorod for Hydrogen and Oxygen Evolution Reaction: An Efficient and Stable Electrocatalyst

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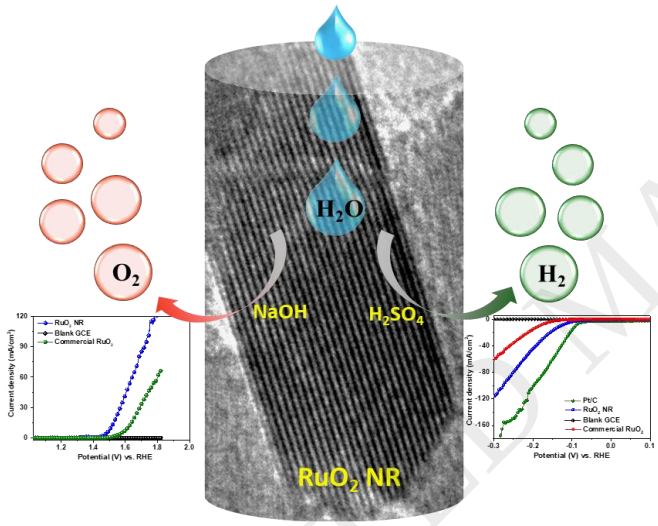
Graphical abstract



Abstract

RuO_2 nanorod (NR), an efficient and stable catalyst for hydrogen and oxygen evolution reaction is developed via wet-chemical route. Initially, a carbon slurry has been prepared using glucose and urea via heating at 140 ^oC for 6 h. During the preparation of carbon slurry Ru^{3+} salt has been added to disperse homogeneously. Finally, calcination at 500 ^oC for 10 h has been performed using homogeneously distributed Ru^{3+} ion in carbon slurry to get RuO_2 NR. The synthesized RuO_2 NR has been well characterized using FESEM, TEM, PXRD, and XPS analysis. The average aspect ratio of a single RuO_2 rod is ~ 4.37. The synthesized RuO_2 NR has been used extensively as an electrocatalyst for hydrogen and oxygen evolution reaction. RuO_2