

ONE STEP SYNTHESIS OF MOLYBDENUM CARBIDE NANOPARTICLES FOR EFFICIENT HYDROGEN EVOLUTION REACTION

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Hydrogen has been promoted as an alternative source of energy, which is renewable, cost-effective and nature-friendly. Hydrogen evolution reaction (HER) can be used for mass production of hydrogen at a very low cost through electrochemical water splitting. An active and efficient electrocatalyst is required to perform this reaction. Till date, platinum (Pt) is a stable and efficient electrocatalyst towards HER. But its high cost and low abundance hinders its large scale uses. Molybdenum carbide having a similar electronic structure to platinum can be a great alternative to costly platinum. In this study, pure phase molybdenum carbide (Mo₂C) has been synthesized in a single step. Synthesis temperature and holding time has been optimized to obtain pure phases of Mo₂C. The surface, structural and morphological properties of as-synthesized compounds has been studied. The HER activity of as-synthesized compounds has been explored in detail.

KEYWORDS: *Molybdenum carbide; Hydrogen evolution reaction; Solution route*
