## **Accepted Manuscript**

Synthesis and characterization of micro-composites: For enhanced electrochemical properties

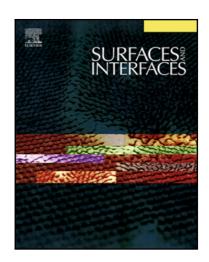
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PII: S2468-0230(18)30077-4 DOI: 10.1016/j.surfin.2018.02.002

Reference: SURFIN 178

To appear in: Surfaces and Interfaces

Received date: 5 August 2017 Revised date: 9 February 2018 Accepted date: 10 February 2018



Please cite this article as: Subhash Singh, Navjot Kaur, Vinay Panwar, Kaushik Pal, Synthesis and characterization of micro-composites: For enhanced electrochemical properties, *Surfaces and Interfaces* (2018), doi: 10.1016/j.surfin.2018.02.002

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Synthesis and characterization of micro-composites: For enhanced electrochemical

properties

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**Abstract** 

In this study, we describe an experimental investigation on synthesis and characterization of silicon carbide (SiC) particles encapsulated with MgO (magnesium oxide) and nanocrystalline MgAl<sub>2</sub>O<sub>4</sub> spinel (magnesium aluminate), respectively through sol-gel route, a facile technique. Synthesized microcomposites were comprehensively examined by various characterization techniques like FE-SEM (Field emission scanning electron microscopy), XRD (X-Ray diffraction) and TEM (Transmission electron microscopy), respectively. Elemental mapping and X-ray energy dispersion spectroscopy (EDX) associated with high-resolution SEM provided the specific amount of shell materials. Furthermore, cyclic voltammetry (CV) and electrochemical impedance spectroscopy (EIS) examination was conducted for the MgO encapsulated SiC and MgAl<sub>2</sub>O<sub>4</sub> encapsulated SiC microcomposites. The synthesized encapsulated SiC with MgAl<sub>2</sub>O<sub>4</sub> spinel is having a better catalytic ability and show higher peak currents compared to MgO

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decorated SiC and pristine SiC. The results obtained from EIS and CV testing demonstrate that

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