

## Template synthesis of core-shell WS<sub>2</sub>@N/C nanocage Multifunctional Electrocatalysts for DSSCs, ORR and OER

Xiaohui Liu, Yanfang Gao,\*

College of Chemical Engineering, Inner Mongolia University of Technology



### Abstract

Due to its unique characteristics of large specific surface area of transition metal dihalides (TMDs) and clear hollow metal-organic framework (MOF), are widely used in dye sensitized solar cells (DSSCs), oxygen reduction (ORR), oxygen evolution reaction (OER) and other fields. 2D transition metal dichalcogenides (TMDs) analogous structure like graphite, its structure is composed of three atomic layers, a W layer sandwiched between two S layers, and the triple layers are stacked by weak van der Waals interaction. [1] Metal-organic framework (MOF) synthesized by the assembly of metal nodes and organic linkers, have emerged as promising materials for diverse applications due to their high porosity and ultrahigh surface area. [2] Calcinate the MOF material at high temperature, get the N-doped hollow carbon nanocages. TMDs combined with MOF templating synthesis of few-layered WS<sub>2</sub> Nanoplates confined in Metal-organic framework Nanocages for dye-sensitized solar cells as the counter electrode. [3]

N/C hollow metal-organic frame structural materials were prepared and used as templates to grow WS<sub>2</sub> core-shell and encapsulated them in MOF with a W-N interfacial coupling center. During the pyrolysis process, after carbonization, ZIF-67 becomes Co, N-doped C material, which effectively inhibits the growth of WS<sub>2</sub> and forms the multi-functional group WS<sub>2</sub>@N/C material. Among them, the WS<sub>2</sub> core-shell structure has better catalytic performance than the layered structure.

### Biography:

Yanfang Gao has completed her PhD at the age of 30 years from Fukui University and postdoctoral studies from Tsinghua University of Chemistry. She is a professor at the department of Inner Mongolia University of Technology, a tutor of a PhD student. She has published more than 20 papers in reputed journals.

[26th International Conference on Advanced Materials, Nanotechnology and Engineering](#) June 22-23, 2020.

### Abstract Citation:

Ms. Yanfang Gao Template synthesis of core-shell WS<sub>2</sub>@N/C nanocage Multifunctional Electrocatalysts for DSSCs, ORR and OER 2020, 26th International Conference on Advanced Materials, Nanotechnology and Engineering June 22-23, 2020

<https://advancedmaterials.conferenceseries.com/poster-presentation.php>

