

# マテリアル先端リサーチインフラ利用報告書

## ARIM User's Report

[Release : 2024.07.25] [Update : 2024.04.04]

### 課題データ / Project Data

課題番号 Project Issue Number	23HK0088
利用課題名 Title	CO <sub>2</sub> 水素化反応用金属触媒の特性評価
利用した実施機関 Support Institute	北海道大学 / Hokkaido Univ.
機関外・機関内の利用 External or Internal Use	外部利用/External Use
横断技術領域 Cross-Technology Area	計測・分析/Advanced Characterization
重要技術領域 Important Technology Area	革新的なエネルギー変換を可能とするマテリアル/Materials enabling innovative energy conversion 次世代ナノスケールマテリアル/Next-generation nanoscale materials
キーワード Keywords	太陽電池/ Solar cell,電子顕微鏡/ Electronic microscope,ナノシート/ Nanosheet

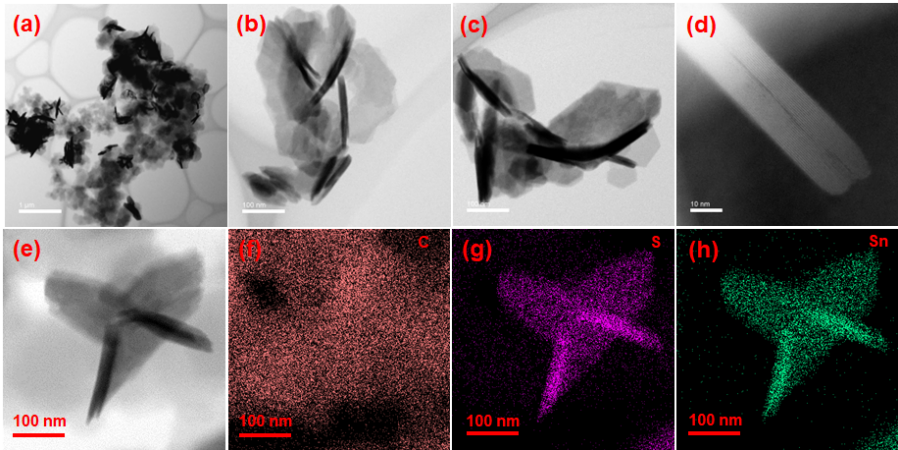
### 利用者と利用形態 / User and Support Type

利用者名（課題申請者） User Name (Project Applicant)	Mondal John
所属名 Affiliation	CSIR institute of Chemical Technology, Hyderabad, India
共同利用者氏名 Names of Collaborators in Other Institutes Than Hub and Spoke Institutes	
ARIM実施機関支援担当者 Names of Collaborators in The Hub and Spoke Institutes	Abhijit Shrotri
利用形態 Support Type	機器利用/Equipment Utilization

### 利用した主な設備 / Equipment Used in This Project

利用した主な設備 Equipment ID & Name	HK-401 : 収差補正走査型透過電子顕微鏡 HK-101 : ダブル球面収差補正走査透過型電子顕微鏡
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### 報告書データ / Report

<p>概要 (目的・用途・実施内容) Abstract (Aim, Use Applications and Contents)</p>	<p>We synthesized ionic functionalized porous organic polymer (I-POP)-supported SnS<sub>2</sub> composite photocatalysts, namely, <b>SnS<sub>2</sub>-C@POP</b>, for solar driven photocatalytic reaction. <b>SnS<sub>2</sub>-C@POP</b> is characterized by <b>HRTEM</b> and <b>HAADF-STEM</b> analysis in which SnS<sub>2</sub> is exists as sheet type morphology well dispersed over the microporous polymer framework composed of a number of nanosheets having uniform sheet dimension.</p>
<p>実験 Experimental</p>	<p>The morphology and dispersion of metal in polymer was analyzed by JEOL ARM-200 HAADF-STEM at 300 eV.</p>
<p>結果と考察 Results and Discussion</p>	<p>The morphology of as-prepared <b>SnS<sub>2</sub>-C@POP</b> samples was characterized by High-resolution transmission electron microscopy (HRTEM) and High-angle annular dark-field scanning transmission electron microscopy (HAADF-STEM). <b>SnS<sub>2</sub>-C@POP</b> sample exhibit sheet type morphology well dispersed over the microporous polymer framework composed of a number of nanosheets having uniform sheet dimension ~ 200-350 nm; however, these aggregated nanosheets have rough surface (<b>Figure 1a-c</b>). Typical thickness of the <b>SnS<sub>2</sub>-C@POP</b> nanosheets is ~ 30-40 nm. The corresponding HAADF elemental mapping analysis of <b>SnS<sub>2</sub>-C@POP</b> catalyst in <b>Figure 1e-h</b> signifies that Sn (green), S (pink) and C (brown) are evenly distributed within the framework.</p>
<p>図・表・数式 1 Figures, Tables and Equations 1</p>	 <p><b>Figure:1</b> (a-c) HRTEM images and (d-h) HAADF-STEM images with the corresponding elemental mapping analysis of <b>C-SnS<sub>2</sub>@POP</b>.</p>
<p>その他・特記事項 (参考文献・謝辞等) Remarks(References and Acknowledgements)</p>	

### 成果発表・成果利用 / Publication and Patents

<p>DOI (論文・プロシーディング) DOI (Publication and Proceedings)</p>	
<p>口頭発表、ポスター発表 および、その他の論文[1] Oral Presentations etc.</p>	<p>Manuscript under preparation</p>
<p>特許出願件数 Number of Patent Applications</p>	<p>0件</p>
<p>特許登録件数 Number of Registered Patents</p>	<p>0件</p>