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：2025.06.10】　【Update：2025.04.06】

課題データ / Project Data

課題番号 Project Issue Number	24NM5217
利用課題名 Title	エレクトロクロミック調光ガラスデバイス開発
利用した実施機関 Support Institute	物質・材料研究機構 / NIMS
機関外・機関内の利用 External or Internal Use	内部利用（ARIM事業参画者以外）/Internal Use (by non ARIM members)
ARIM半導体基盤PF 関連課題 Related to ARIM-SETI	指定なし / No Designation
横断技術領域 Cross-Technology Area	計測・分析/Advanced Characterization
重要技術領域 Important Technology Area	マテリアルの高度循環のための技術/Advanced materials recycling technologies
キーワード Keywords	X線回折/ X-ray diffraction,高度素材識別技術/ Advanced material identification technology,電子分光/ Electron spectroscopy

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)	樋口 昌芳
所属名 Affiliation	物質・材料研究機構
共同利用者氏名 Names of Collaborators Excluding Supporters in the Hub and Spoke Institutes	
ARIM実施機関支援担当者 Names of Supporters in the Hub and Spoke Institutes	Dr. Yoshitaka Matsushita
利用形態 Support Type	技術代行/Technology Substitution,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	NM-209：2波長Pilatus低温単結晶X線回折装置_NSC NM-202：硬X線光電子分光分析装置（HAX-PES/XPS）

報告書データ / Report

概要（目的・用途・実施内容） Abstract (Aim, Use Applications and Contents)	Research and development of Electrochromic Dimmable Glass Devices is a huge attraction nowadays as window-modified materials in advanced buildings. They are capable of blocking solar radiation by altering their color from transparent-to-dark mode in the presence of applied bias. This leads to save a fraction of primary energy sources used in buildings for space cooling or ventilation. Therefore, our intention is to create a metal-organic assembly system, which could show transparent to dark EC. Creating an Fe-containing metal-organic assembly would be a great choice as Fe is an abundant material. So, we try to develop an Fe-containing organo-metallic polymer system. To get confirmation of synthesized compound and their structure it was necessary to go through some characterization techniques like Single Crystal diffraction (SC-XRD), XPS, or thickness measurement of film.
実験 Experimental	We have synthesized an Fe-containing complex. The complex later was assembled into a deposition technique to form a thin-film of the molecular assembly on ITO-glass.
結果と考察 Results and Discussion	For structural information of the sample, the first SC-XRD of complexes and XPS analysis of the film were measured. The SC-XRD revealed the expected complex with the Fe state, the same Fe state was also confirmed in the film from XPS analysis. The average thickness was measured by 2D profilometer.
図・表・数式 Figures, Tables and Equations	
その他・特記事項（参考文献・謝辞等） Remarks(References and Acknowledgements)	

成果発表・成果利用 / Publication and Patents

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