

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 : 2024.05.19]

課題データ / Project Data

課題番号 Project Issue Number	23NM5150
利用課題名 Title	熱電材料の基礎開発
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 加工・デバイスプロセス/Nanofabrication
重要技術領域 Important Technology Area	量子・電子制御により革新的な機能を発現するマテリアル/Materials using quantum and electronic control to perform innovative functions 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	電子顕微鏡/ Electronic microscope,光学顕微鏡/ Optical microscope,X線回折/ X-ray diffraction,電子回折/ Electron diffraction,電子分光/ Electron spectroscopy,蒸着・成膜/ Vapor deposition/film formation,リソグラフィ/ Lithography,膜加工・エッチング/ Film processing/etching,ワイヤーボンディング/ Wire Bonding,原子薄膜/ Atomic thin film,資源使用量低減技術/ Technologies for reducing resource usage,未利用資源の有効利用技術/ Technologies for effective utilization of unused resources

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)	森 孝雄
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	Frank.F.Yun
ARIM実施機関支援担当者 Names of Supporters in the Hub and Spoke Institutes	
利用形態 Support Type	機器利用/Equipment Utilization,技術補助/Technical Assistance

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-604 : マスクレス露光装置 [DL-1000/NC2P] NM-645 : ICP-RIE装置 [CE300I] NM-659 : ワイヤーボンダー [7476D #1] NM-654 : 触針式プロファイラー [Dektak 6M] NM-648 : FE-SEM+EDX [SU8000]
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報告書データ / Report

概要 (目的・用途・実施内容) Abstract (Aim, Use Applications and Contents)	Nano fabrication is essential in the implementation of thermal conductivity measurements for in-plane thermal conductivity of thin films such as the 3-omega method. The purpose for the use of nano fabrication equipment is to design and optimize thin film heaters and structures to ensure high quality results of in-plane thermal conductivity measurements. The development of in-plane thin film measurement systems are essential in the understanding and enhancement of thin film thermoelectric devices.
実験 Experimental	Experiments will be carried out to etch and pattern heater and sensor structures in conjunction with theoretically modeled systems to optimize measurement structures and enhance reliability and accuracy of measurements for in-plane thermal conductivity.
結果と考察 Results and Discussion	Experiments and designs are still ongoing and underdevelopment to model and verify between theory and experiment, it is necessary to optimize the structures and materials to enhance reliability and accuracy of in-plane thermal conductivity measurements.
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[1] Oral Presentations etc.	"Surface phonon dispersion measurement of novel 2D materials" MRM2023/IUMRS-ICA2023(KYOTO) DECEMBER 11-16 2023
特許出願件数 Number of Patent Applications	0件
特許登録件数 Number of Registered Patents	0件