

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 : 2024.05.13]

課題データ / Project Data

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| 課題番号 Project Issue Number | 23NM0155 |
| 利用課題名 Title | TEM Analysis of Materials Treated in Ammonia environment |
| 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 | 外部利用/External Use |
| 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 | マルチマテリアル化技術・次世代高分子マテリアル/Multi-material technologies / Next-generation high-molecular materials |
| キーワード Keywords | 表面・界面/ Surface and Interface, 各種表面処理等/ Various surface treatments, コンポジット材料/ Composite material |

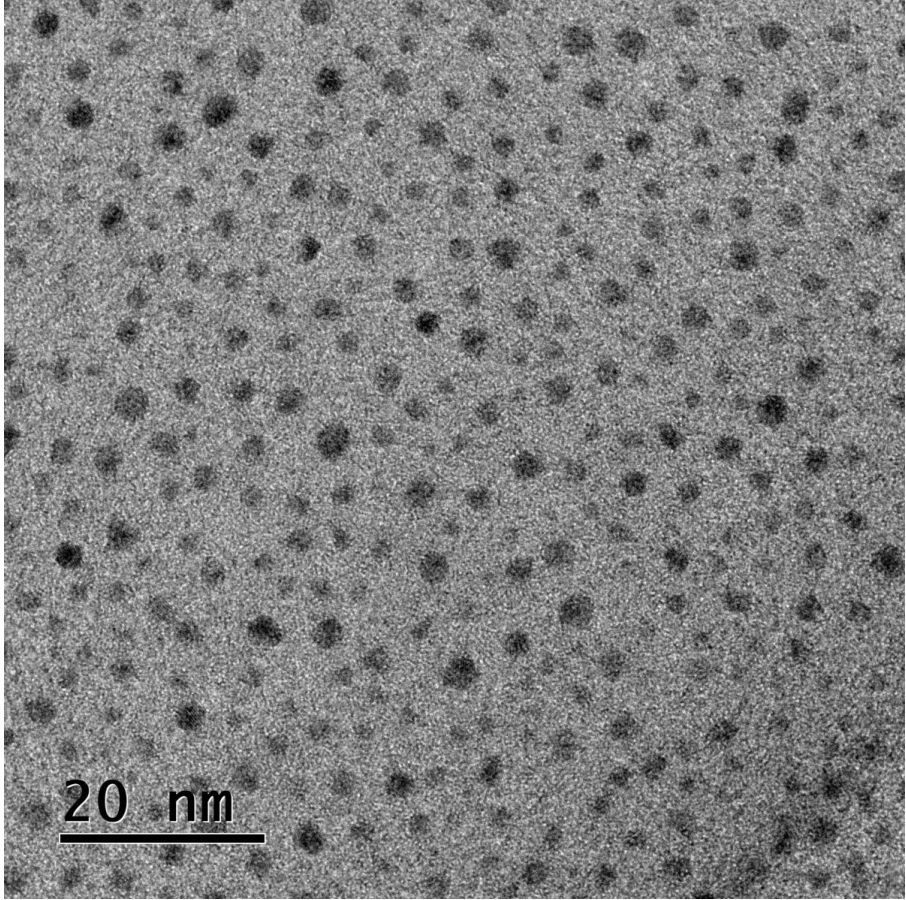
利用者と利用形態 / User and Support Type

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| 利用者名（課題申請者） User Name (Project Applicant) | Ghara Tina |
| 所属名 Affiliation | 産業技術総合研究所 |
| 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 | |
| 利用形態 Support Type | 技術補助/Technical Assistance |

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

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| 利用した主な設備 Equipment ID & Name | NM-503 : 200kV電界放出形透過電子顕微鏡 (JEM-2100F1) NM-504 : 200kV電界放出形透過電子顕微鏡 (JEM-2100F2) NM-516 : TEM試料作製装置群 |
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報告書データ / Report

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| <p>概要 (目的・用途・実施内容) Abstract (Aim, Use Applications and Contents)</p> | <p>We will evaluate the corrosion protection layer of materials in an ammonia environment by TEM with the aim of developing an optimal coating layer. Analysis of the microstructure and composition of the nitride layer formed on the alloy surface and the coatings deposited on it will be performed by TEM. We request technical assistance until we have the skills to use TEM.</p> |
| <p>実験 Experimental</p> | <p>TEM Bright Field and Dark Field micrographs of Au nano-particles were acquired. Moreover, corresponding Selected Area Diffraction patterns (SADP) were also obtained.</p> |
| <p>結果と考察 Results and Discussion</p> | <p>The TEM BF image of Au nano-particles are shown in Fig.1. The BF micrograph of Si obtained through TEM is shown in Fig.2, and the corresponding SADP is presented in Fig.3 depicting diamond like FCC crystal. HRTEM image and corresponding FFT of Si are shown in Fig.4, and Fig.5, respectively.</p> |
| <p>図・表・数式 1 Figures, Tables and Equations 1</p> | <div style="text-align: center;">  <p>20 nm</p> </div> <p>Fig.1. TEM BF image of Au nano-particles</p> |

図・表・数式 2
Figures, Tables and
Equations 2

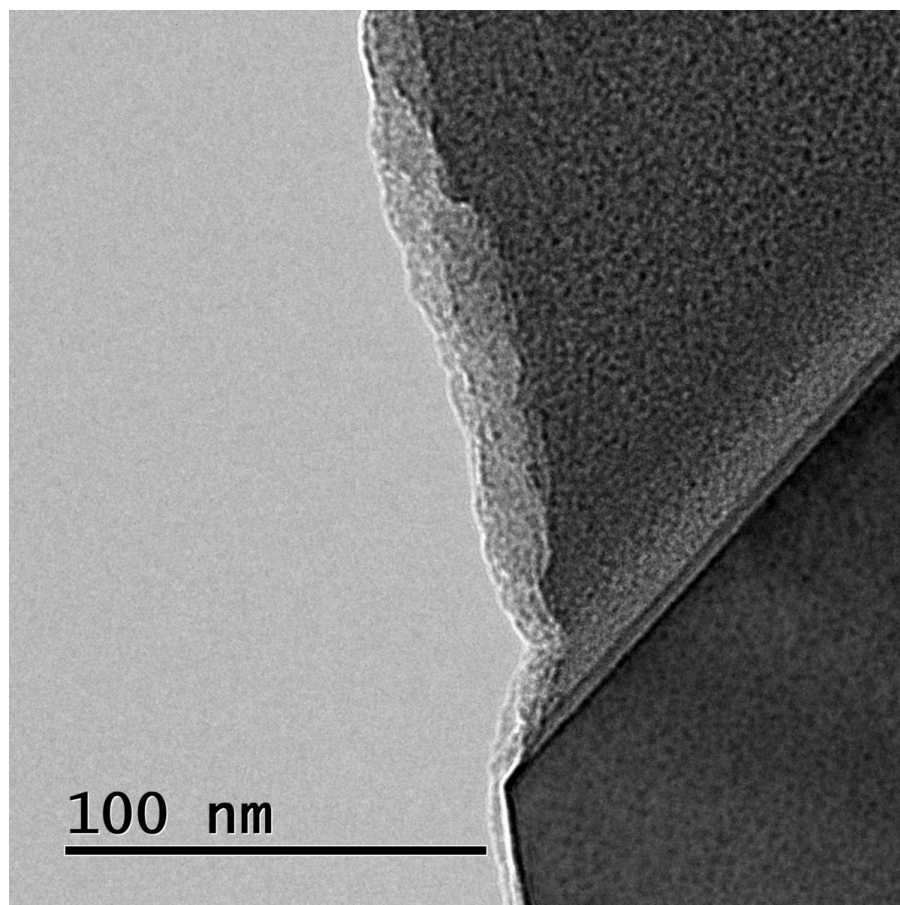


Fig.2. TEM BF micrograph of Si

図・表・数式 3
Figures, Tables and
Equations 3

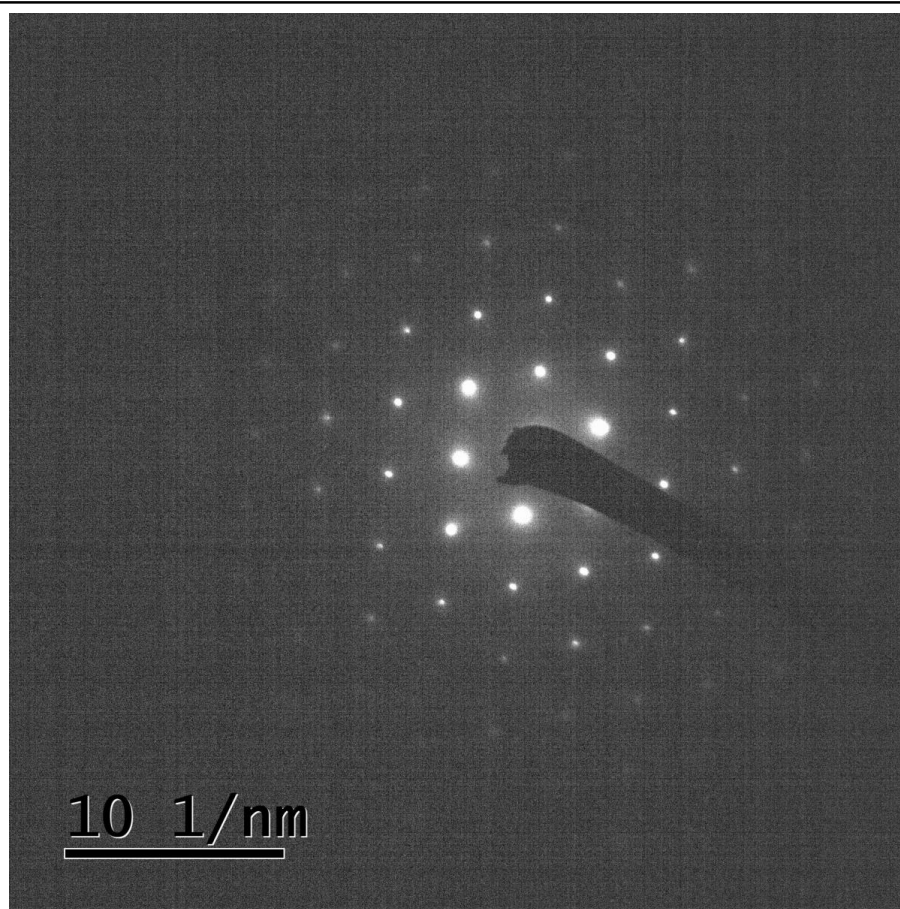
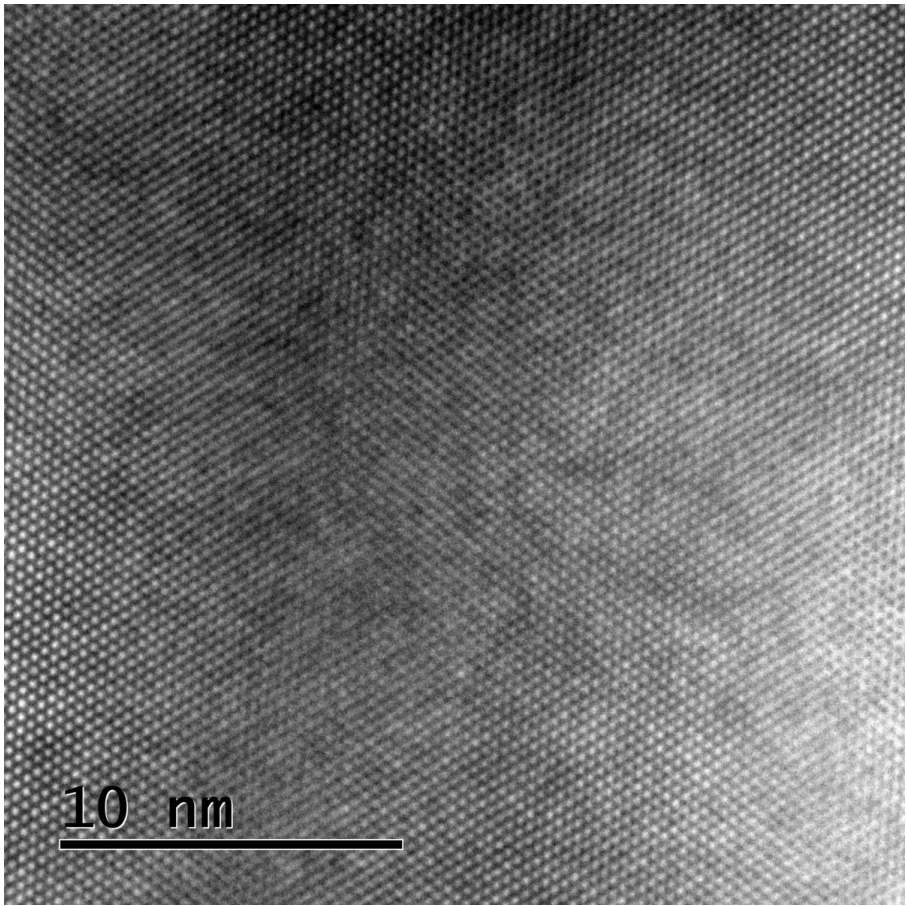
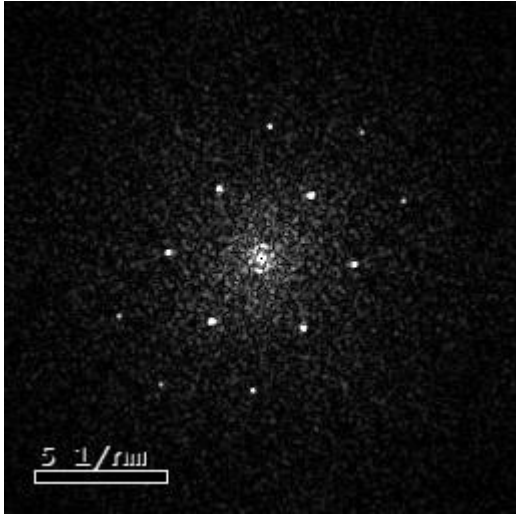


Fig.3. SADP of Si from Fig.2

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| <p>図・表・数式 4 Figures, Tables and Equations 4</p> |  <p>Fig.4. HRTEM image of Si</p> |
| <p>図・表・数式 5 Figures, Tables and Equations 5</p> |  <p>Fig.5. FFT of Fig.4</p> |
| <p>その他・特記事項 (参考文献・謝辞等) Remarks(References and Acknowledgements)</p> | <p>The author would like to thank Dr. Akira Hasegawa, Dr. Isaka Noriko from national Institute for Materials Science for their immense assistance and support during the work.</p> |

成果発表・成果利用 / Publication and Patents

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| <p>DOI (論文・プロシーディング) DOI (Publication and Proceedings)</p> | |
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| 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 |