

講演会のご案内

メキシコ・IPICYT の Emilio Munoz Sandval 先生をお迎えし、下記の通り講演会を開催します。



Emilio 先生は、ナノ構造磁性材料の物理的特性の研究など、ナノテクノロジー分野に大きく貢献されており、現在、IPICYT（ポトシ科学技術研究所）の先端材料部門 (DMA) において、新しいナノ構造材料の磁気特性の分野で研究をなさっています。

この機会にぜひ、Emilio 先生のご講演をご聴講ください。

- 日 時：2023 年 7 月 6 日(木) 14:00~15:30
- 場 所：信州大学 長野(工学)キャンパス（長野市若里 4-17-1）
総合研究棟1階 106教室
- 講 師：Dr. Emilio Munoz Sandval（IPICYT 主任研究員）
- 主 催：先鋭材料研究所 特別荣誉教授 遠藤守信
- 講演テーマ：" Twisted defects in graphene and transition metal dichalcogenides "

※講演は英語で行います

【講演要旨】

Twisted defects in graphene and transition metal dichalcogenides

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Numerous methodologies exist for fabricating graphene and transition metal dichalcogenides, employing diverse substrates, catalysts, and precursor materials. Due to its versatility, cost-effectiveness, and scalability for industrial applications, the most prevalent technique is chemical vapor deposition (CVD). Commonly employed carbon precursors include methane, acetylene, methane-hydrogen, and select alcohols. Copper is the substrate of choice for graphene production due to its near-impermeability to carbon. In the case of transition metal dichalcogenides, the fabrication method involves the utilization of dual heating zones: one for MoO₃ powders and another for sulfur powders and additional precursor salts. In our devised strategy, for the production of graphene flakes, we exploit the solubility of carbon in ferrite (α -Fe), estimated to be approximately 0.1% at 700 °C. This scenario enables the generation of graphene layers on the ferrite surface. Nanostructured hematite is employed for this purpose, which upon reduction at 950 °C, yields γ -Fe nanocrystals that subsequently transform into α -Fe upon cooling. Graphene flakes are formed by employing a mixture of benzylamine and 1,2-dichlorobenzene, flown during the cooling process. Conversely, for the fabrication of MoS₂ sheets, a pressed sandwich-like structure is utilized as a catalytic precursor, consisting of alternating layers of MoO₃ and sulfur. This approach obviates the need for precursor salts and entails using a single furnace and one heating zone.