

研究タイトル：

エネルギー関連の金属触媒の設計



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所属学会・協会： なし

 キーワード： 触媒設計、不均一触媒、バイオマス、水素、CO₂

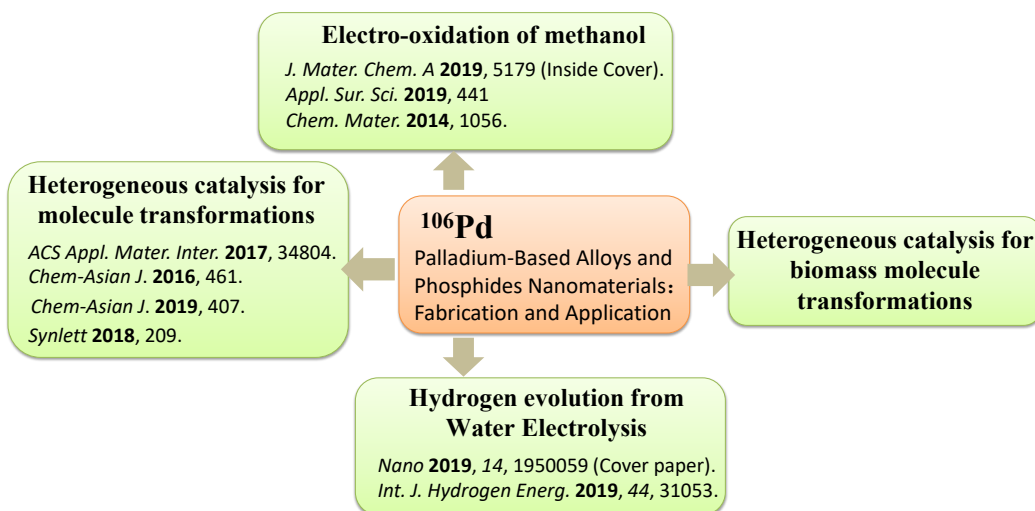
 技術相談
 提供可能技術：

- ・有機反応のための触媒設計
- ・バイオマス変換のための触媒設計
- ・H₂生成とCO₂水素化用の触媒設計

研究内容： Design of Metal Phosphide Nanomaterials for Selective and Durable Catalysis

Currently my research mainly focuses on the development of palladium-based nanomaterials and their application as heterogeneous catalysts and electro-catalysts. Amorphous materials have been widely researched in heterogeneous catalysis and for next-generation batteries. My research partially focuses on the fabrication of high-quality (e.g., monodisperse and high surface area) amorphous alloy nanomaterials. I investigate the correlations between the composition and morphology of Pd-M-P nanoparticles (NPs) to obtain amorphous alloy NPs. The electronic interactions between metal and phosphorous atoms are studied. The materials can be used as highly selective heterogeneous catalysts for hydrogenation, reduction, oxidation, and tandem reaction.

With the growing energy crisis related to fossil fuels, many studies have been done on the evolution of renewable energy such as hydrogen gas. My research also focuses on the development of efficient and durable electro-catalysts for commercialization of hydrogen evolution (HER). To accelerate water dissociation and weaken the adsorption energy of hydrogen on catalyst surface, I am now designing multi-compositional Pd-M-P nanomaterials for alkaline and neutral HER.



提供可能な設備・機器： (公開記事の有無を付記願います)

名称・型番(メーカー)

なし