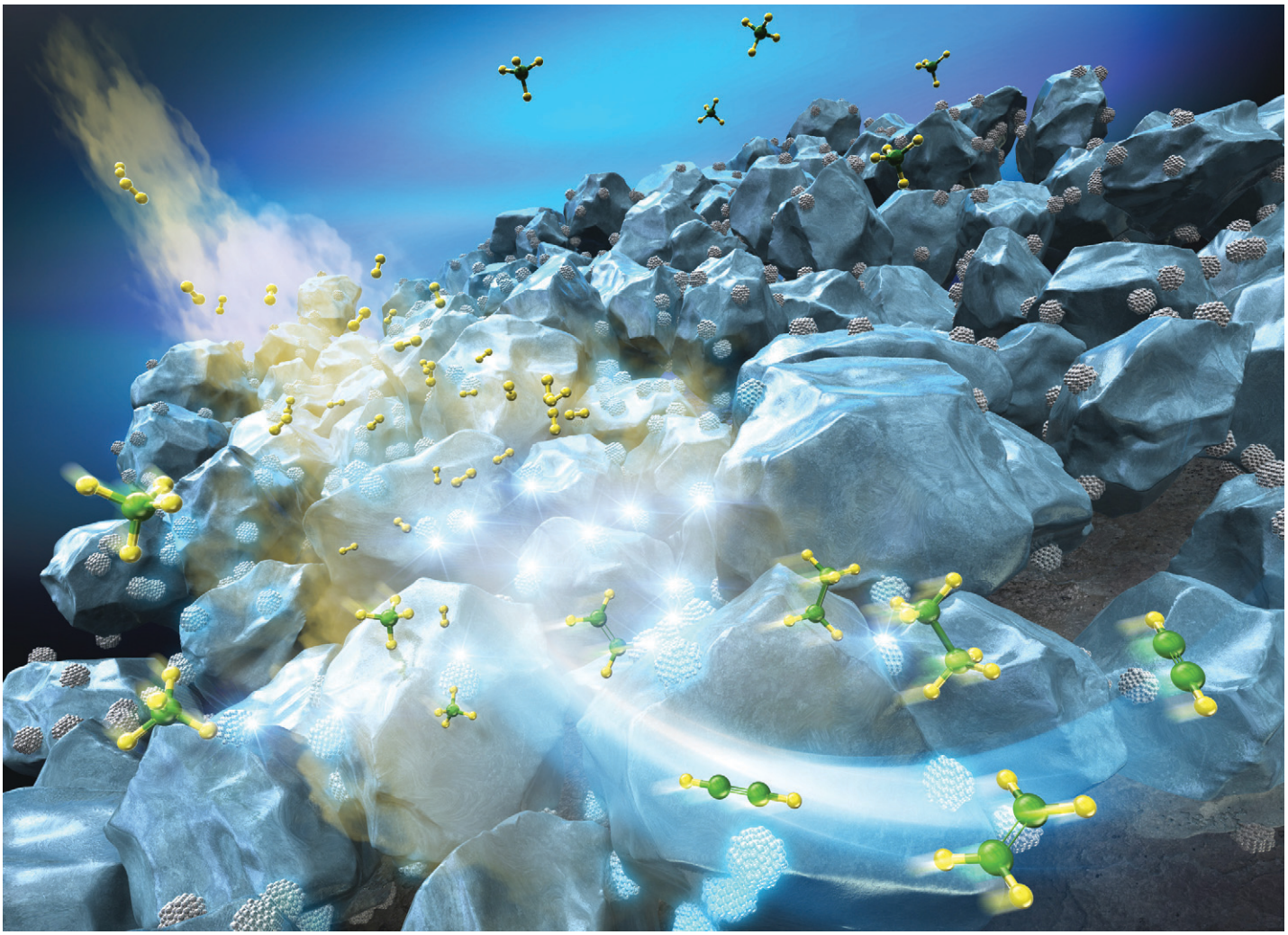

Showcasing research from Professor Hitoshi Ogihara's laboratory, Graduate School of Science and Engineering, Saitama University, Saitama, Japan.

Dehydrogenative coupling of methane over Pt/Al_2O_3 catalysts: effect of hydrogen co-feeding

The dehydrogenative conversion of methane (DCM) is a promising technology for using natural gas as a chemical resource. In this study, we developed a novel DCM system in which a typical dehydrogenation catalyst, Pt/Al_2O_3, effectively converted methane into C_2 hydrocarbons with the aid of H_2 co-feeding. H_2 co-feeding prevented coke deposition on Pt, ensuring consistent C_2 hydrocarbon production. Pt particle size plays a crucial role in DCM performance and coke deposition. We elucidated the relationship between the catalyst structure and DCM reaction using advanced techniques such as HAADF-STEM, XAFS, XPS, and FT-IR.

As featured in:

See Hitoshi Ogihara *et al.*, *Catal. Sci. Technol.*, 2023, **13**, 4656.

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