

Name ONODERA Gen	Job Title Associate Professor	Area of Expertise Organometallic Chemistry, Organic Synthesis
1. Main Research Topics One of our research topics is the development of a novel organic synthesis method using a transition-metal catalyst bearing a Lewis acidic moiety. We designed and synthesized phosphine compounds bearing a Lewis acidic borane moiety. We have attempted to develop highly active transition-metal catalysts in which Lewis acid and transition-metal moieties can work in concert. Coordinating Phosphine Moiety $\longrightarrow$ R_2P $\xleftarrow{\text{Lewis Acidic Borane Moiety}}$ BR'_2 Transition-Metal $\longrightarrow$ M ① Carbon–Oxygen Bond Activation of Allylic and Benzylic Alcohols The substitution reactions of allylic and benzylic alcohols with nucleophiles (HNu) proceeded smoothly via carbon–oxygen bond cleavage using a palladium catalyst bearing a borane moiety. References: <i>Org. Lett.</i> 2017, 19, 6148; <i>Adv. Synth. Catal.</i> 2018, 360, 1954; <i>Tetrahedron Lett.</i> 2020, 61, 152537. ② Aromatic Carbon–Hydrogen Bond Activation We reported that the aromatic carbon–hydrogen bond was cleaved, and hydrogen was substituted by a silyl group using an iridium catalyst bearing a borane moiety. Reference: <i>Adv. Synth. Catal.</i> 2022, 364, 1223. ③ Dual Activation of Malonate Moiety and Alkyne Moiety The novel cycloisomerization of a malonate derivative proceeded using a gold complex bearing a borane moiety. Reference: <i>Adv. Synth. Catal.</i> doi.org/10.1002/adsc.70064.		
2. Keywords Transition-metal catalyst, Lewis acid, Organometallic chemistry, Organic synthesis		
3. Remarks and Websites Other research topics include the development of a novel molecular probe (in collaboration with the school of medicine) and novel organic synthesis using an external electric field. researchmap: https://researchmap.jp/genonodera Laboratory: https://www.cms.nagasaki-u.ac.jp/lab/yuuki/index.html		