

Development of C-N bond formation reactions from molybdenum-nitride complex with carbon-centered electrophiles directed toward formation of organonitrogen compounds

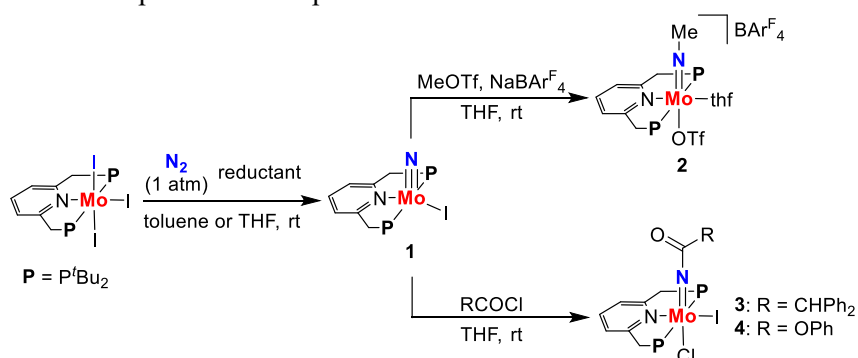
(Graduate School of Engineering, The University of Tokyo,) ○Takayuki Itabashi, Kazuya Arashiba, Shougo Kuriyama, Yoshiaki Nishibayashi,

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Transition metal nitride complexes are known to be as key intermediates in biological and chemical nitrogen fixation and as nitrogen atom transfer reagents for C-N bond formation reaction. Therefore, transformation of nitride complexes derived from dinitrogen into organonitrogen compounds is one of the promising routes to achieve C-N functionalization with dinitrogen.¹

Recently, we have found that molybdenum complexes bearing pincer type ligand cleaved the triple bond of the bridging dinitrogen ligand afforded terminal nitride complexes which worked as catalysts toward ammonia formation under ambient reaction conditions.² Focused on the molybdenum-nitride complex **1** derived from dinitrogen, we have investigated the reaction of complex **1** with carbon-centered electrophiles directed toward the formation of organonitrogen compounds other than ammonia.

Methylation of complex **1** with methyl triflate gave methylimide complex **2** in 58% yield. This result suggested that the terminal nitride ligand of nitride complex **1** has nucleophilic character and motivated us to use other electrophiles. Acylation of **1** with diphenylacetyl chloride and phenyl chloroformate afforded acetylimide complex **3** in 51% yield and carbamate complex **4** in 76% yield, respectively. Further transformation of these complexes will be explained in this presentation.



- 1) Masero, F.; Perrin, M. A.; Dey, S.; Mougél, V. *Chem. Eur. J.* **2020**, doi.org/10.1002/chem.202003134 2) a) Arashiba, K.; Eizawa, A.; Tanaka, H.; Nakajima, K.; Yoshizawa, K.; Nishibayashi, Y. *Bull. Chem. Soc. Jpn.* **2017**, *90*, 1111. b) Arashiba, K.; Tanaka, H.; Yoshizawa, K.; Nishibayashi, Y. *Chem. Eur. J.* **2020**, *26*, 13383.