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Nitrate Upcycling Mediated by Organonickel Catalysis

Angew. Chem. Int. Ed. 2024, e202408457 DOI: 10.1002/anie.202408457.

Synthesis of Oximes by Nickel-Catalyzed Coupling of Nitrates with Organohalides

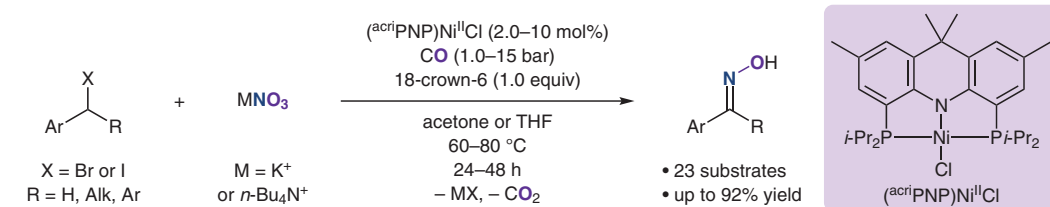
Category

Metals in Synthesis

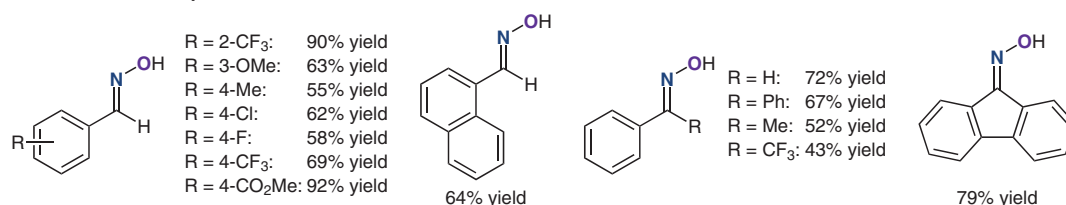
Key words

C–N coupling
denitrication
nickel catalysis
nitrates
oximes

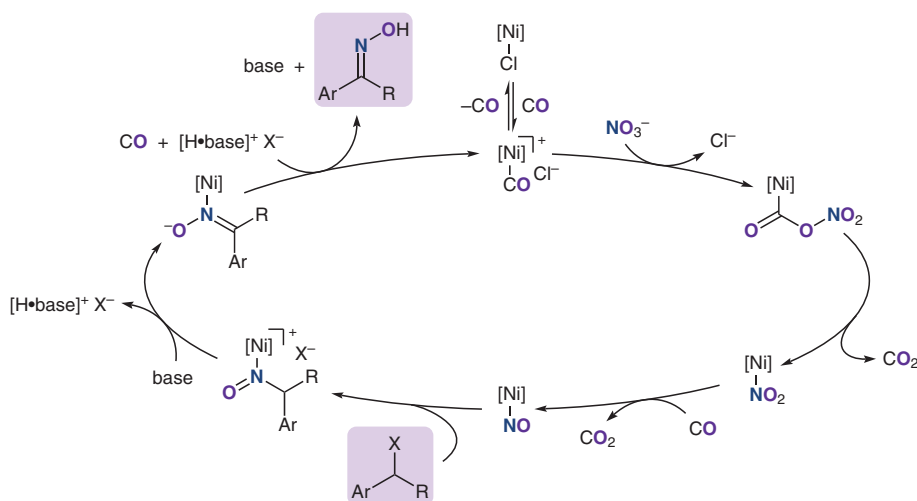
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Selected examples:



Proposed mechanism:



Significance: A nickel-catalyzed protocol for the selective coupling of nitrate salts with organohalides to form oximes is disclosed. This method represents a new strategy for upcycling the environmental pollutant nitrate into synthetically valuable chemicals.

Comment: X-ray structures of catalyst intermediates and DFT calculations support the shown mechanism. While the conversion of aromatic alkyl halides proceeded smoothly, purely aliphatic halides showed no reaction or gave only traces of product.

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Synfacts 2024, 20(09), 0931 Published online: 16.08.2024
DOI: 10.1055/s-0043-1775024; Reg-No.: M10824SF

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