Ni-Catalyzed Aryl Transfer Reaction between Two Different Aromatic Compounds

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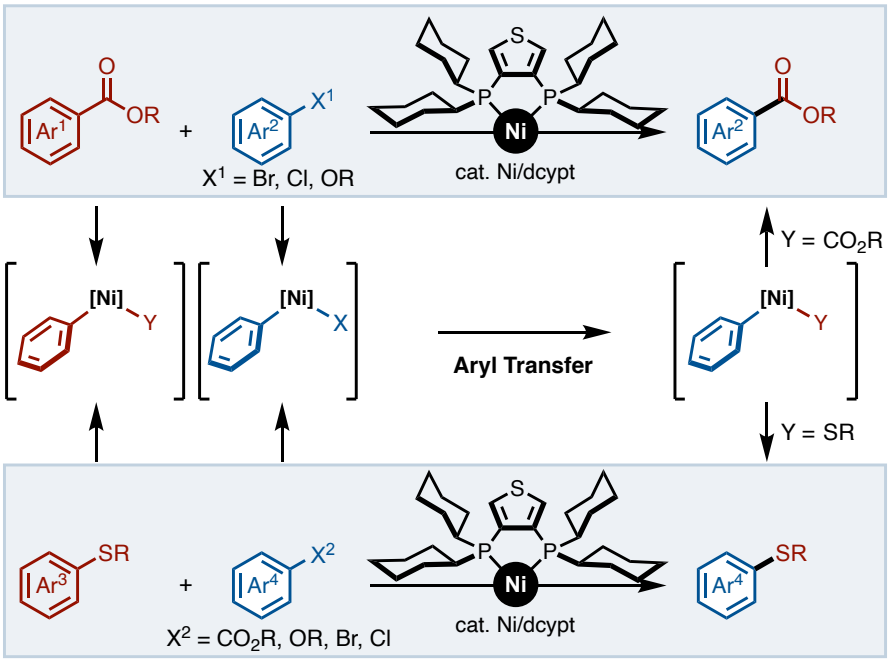
Development of catalytic functionalization of aromatic compounds is one of the most important topics in organic chemistry. Transition-metal-catalyzed cross-coupling such as Buchwald–Hartwig amination and Ullmann condensation are commonly known as a representative method. In recent years, metal-catalyzed aryl transfer reactions between two different aromatic compounds have been developed as a novel arene functionalization approach.[1] The key of these reactions is the use of catalyst capable to both cleave and form two distinct chemical bonds appropriately.

Herein, we have developed two types of Ni-catalyzed aryl transfer reactions of aromatic compounds. We found that Ni/dcypt catalyst enabled an aryl transfer reaction between aromatic esters (Ar^1–CO_2R) and haloarenes or phenol derivatives (Ar^2–X^1) to afford Ar^2–CO_2R.[2] It was also discovered that a similar reaction takes place between aryl sulfides (Ar^3–SR) and aromatic esters, phenols, or haloarenes (Ar^4–X^2), giving Ar^4–SR. In both cases, the use of our Ni/dcypt catalyst was critically important for the reaction progress.



1) Bhawal, B. N.; Morandi, B. *Angew. Chem., Int. Ed.* **2019**, *58*, 10074–10103.
2) Isshiki, R.; Inayama, N.; Muto, K.; Yamaguchi, J. *ACS Catal.* **2020**, *10*, 3490–3494.