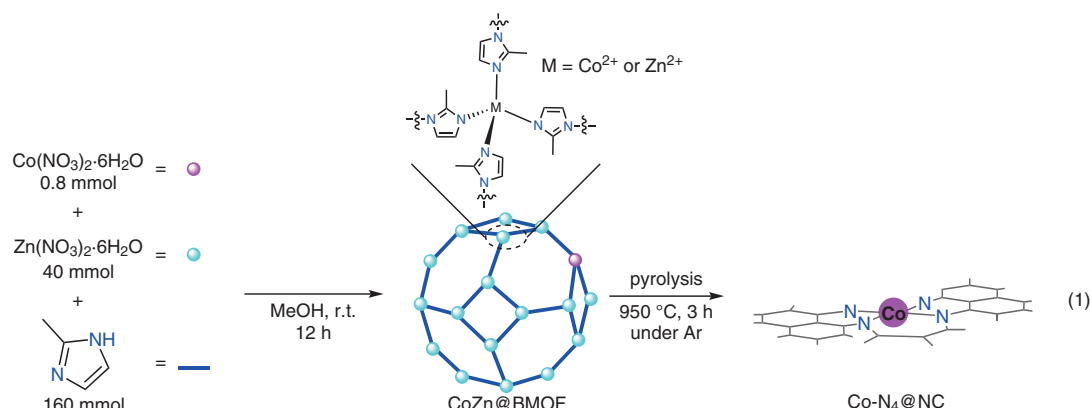


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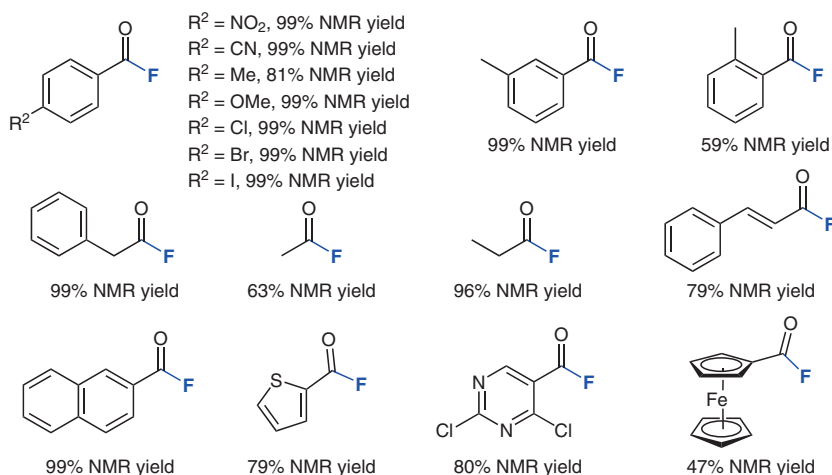
A Single-Atom Cobalt Catalyst for the Fluorination of Acyl Chlorides at Parts-per-Million Catalyst Loading

Angew. Chem. Int. Ed. **2022**, 61, e202209749 DOI: 10.1002/anie.202209749.

Fluorination of Acyl Chlorides Promoted by a Single-Atom Cobalt Catalyst



Selected examples:



Significance: A single-atom cobalt catalyst (Co-N₄@NC) was prepared by pyrolysis of the Zn and Co metal-organic zeolitic framework (CoZn@BMOF) consisting of Zn, Co, and 2-methylimidazole (eq. 1). Co-N₄@NC and AgF catalyzed the fluorination of acyl chlorides with KF as the fluorine source to afford the corresponding acyl fluorides in ≤ 99% NMR yield (eq. 2).

Comment: Co-N₄@NC was characterized by means of TEM, HR-TEM, HAADF-STEM, SEM, nitrogen adsorption–desorption, EDS, XRD, XPS, XANES, FT-EXAFS, ICP-OES, and WT. The fluorination catalyzed by 0.576 ppm of Co-N₄@NC proceeded with a high turnover number of 1.56 × 10⁶.