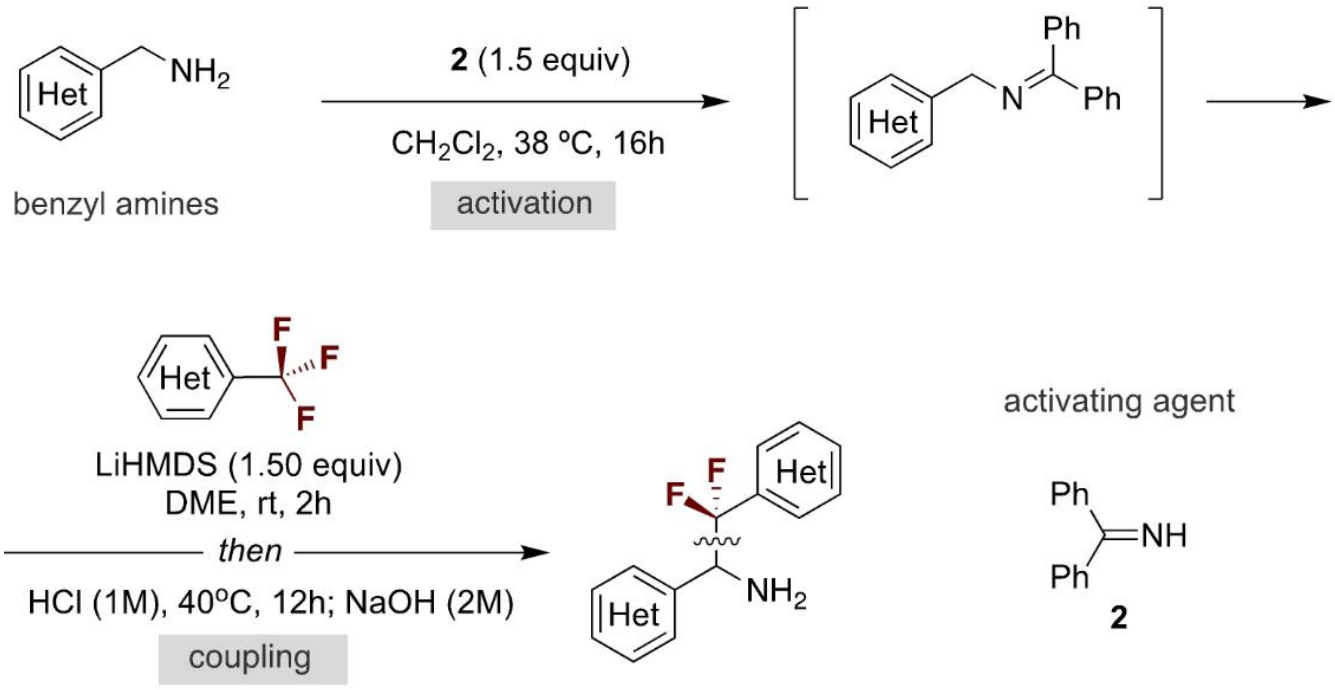
Angewandte Chemie International Edition

α-Difluoroalkylation of Benzyl Amines with Trifluoromethylarenes

Wen-Jun Yue and Ruben Martin

Angew. Chem. Int. Ed. 2023, 62, e202310304
https://doi.org/10.1002/anie.202310304

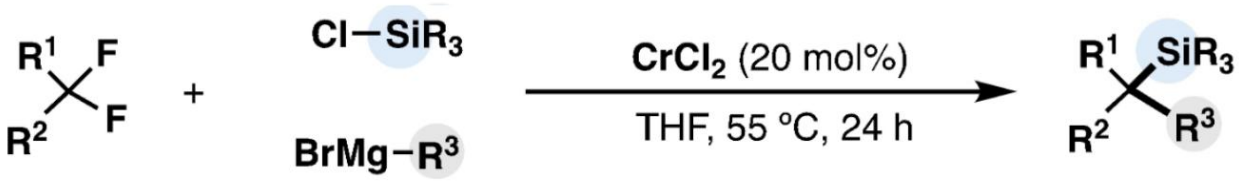


37 examples
yield up to 93%

Chemoselective Three-Component Geminal Cross Couplings of Dihaloalkanes with Cr Catalysis: Rapid Access to Tertiary and Quaternary Alkanes via a Metal–Carbene Intermediate

Sha Wang, Linhong Long, Xiaoyu Zhang, Liang Ling, Hui Chen, and Xiaoming Zeng

Angew. Chem. Int. Ed. 2023, 62, e202312856
https://doi.org/10.1002/anie.202312856

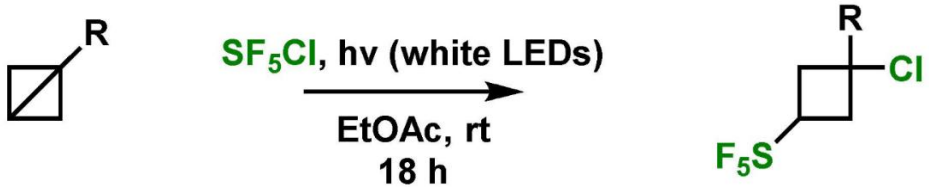


53 examples
yield up to 91%

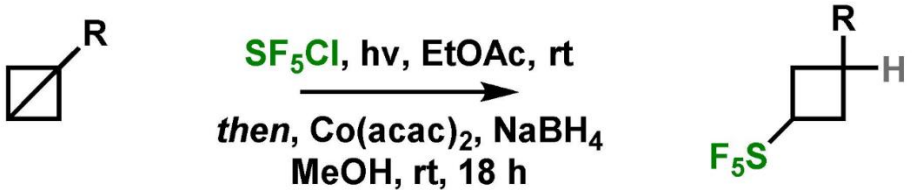
Overcoming a Radical Polarity Mismatch in Strain-Release Pentafluorosulfanylation of [1.1.0]Bicyclobutanes: An Entryway to Sulfone- and Carbonyl-Containing SF5-Cyclobutanes

Yannick Kraemer, Jón Atiba Buldt, Wang-Yeuk Kong, Alexander M. Stephens, Abbey N. Ragan, Soojun Park, Zane C. Haidar, Ansh Hiten Patel, Rachel Shey, Roee Dagan, Connor P. McLoughlin, James C. Fettinger, Dean J. Tantillo, Cody Ross Pitts

Angew. Chem. Int. Ed. 2024, 63, e202319930
https://doi.org/10.1002/anie.202319930



16 examples
yield up to 92%

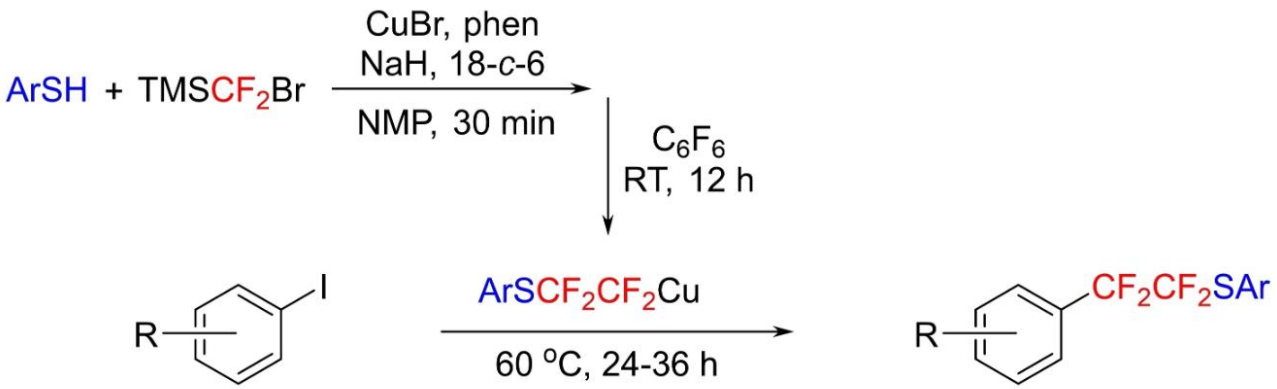


16 examples
yield up to 57%

Controllable Double Difluoromethylene Insertions into S-Cu Bonds: (Arylthio)tetrafluoroethylation of Aryl Iodides with $TMSCF_2B$

Shitao Pan, Qiqiang Xie, Xiu Wang, Rumin Huang, Yuhao Lu, Chuanfa Ni, and Jinbo Hu*

Angew. Chem. Int. Ed. 2024, 63, e202400839
https://doi.org/10.1002/anie.202400839



43 examples
yield up to 96%

Synthetic Advantages of Defluorinative C-F Bond Functionalization (Rewiew)

Leidy V. Hooker and Jeffrey S. Bandar

Angew. Chem. Int. Ed. 2023, 62, e202308880
https://doi.org/10.1002/anie.202308880

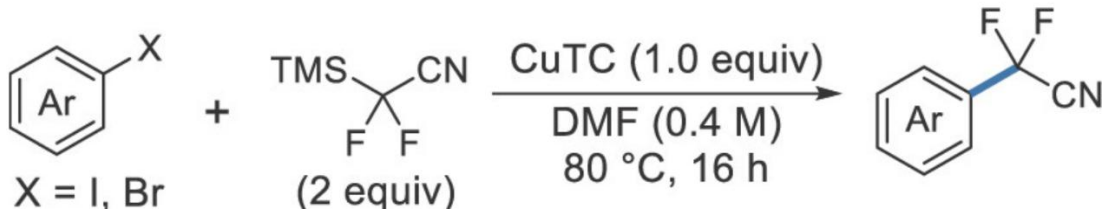
Much progress has been made in the development of methods to both create compounds that contain C-F bonds and to functionalize C-F bonds. As such, C-F bonds are becoming common and versatile synthetic functional handles. This review summarizes the advantages of defluorinative functionalization reactions for small molecule synthesis. The coverage is organized by the type of carbon framework the fluorine is attached to for mono- and polyfluorinated motifs. The main challenges, opportunities and advances of defluorinative functionalization are discussed for each class of organofluorine. Most of the text focuses on case studies that illustrate how defluorofunctionalization can improve routes to synthetic targets or how the properties of C F bonds enable unique mechanisms and reactions. The broader goal is to showcase the opportunities for incorporating and exploiting C F bonds in the design of synthetic routes, improvement of specific reactions and advent of new methods.

Journal of the American Chemical Society

Copper-Mediated Cyanodifluoromethylation of (Hetero)aryl Iodides and Activated (Hetero)aryl Bromides with $TMSCF_2CN$

Jeremy Nicolai, Tommaso Fantoni, Trevor W. Butcher, Sophie I. Arlow, Serhiy V. Ryabukhin, Dmytro M. Volochnyuk, John F. Hartwig

J. Am. Chem. Soc. 2024, 146, 15, 15464–15472
https://doi.org/10.1021/jacs.4c03618



34 examples
yield up to 99%