# Catalytic Difluoroalkylation Reactions by Controlled Radical and Difluorocarbene Cross-Couplings

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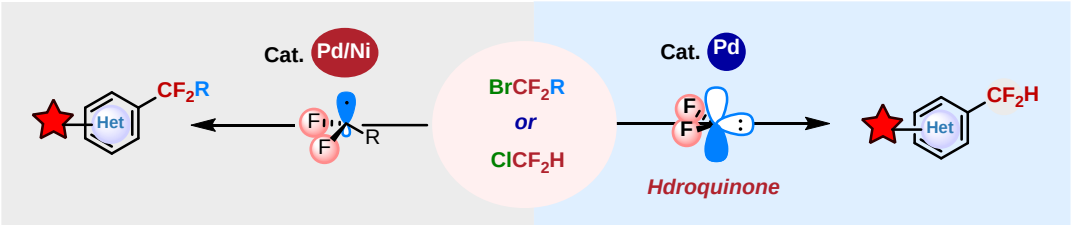


The importance of fluorinated compounds in agrochemicals, pharmaceuticals, and materials science has triggered an explosion of research efforts in developing new and efficient methods to introduce fluorinated functional groups into organic molecules. Although considerable progresses have been achieved in the fluoroalkylation reactions over the past few years, most of them are focused on the use of nucleophilic flurorinated regents (exg. $TMSR_f$, $R_fML_n$) and expensive electrophilic fluorinaged reagents (exg. Umemoto reagent, Togni reagent). However, the use of low-cost and widely available fluoroalkyl halides ($R_f$-X, X = Br, Cl) as starting materials for fluoroalkylations catalyzed by transition-metal has been scarely studied. Since 2012, we have developed several efficient strategies to catalytically access difluoroalkylated compounds from low-cost and readily available difluoroalkyl halides.[1, 2] Herein, we report the catalytic difluoroalkylation reactions by controlled difluorocarbene[3] and radical cross-couplings.[4]

## Reference

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