Cationic Rhodium(I) Tetrafluoroborate-Catalyzed Intramolecular Carbofluorination of Alkenes via C–F Bond Cleavage of Acyl Fluorides

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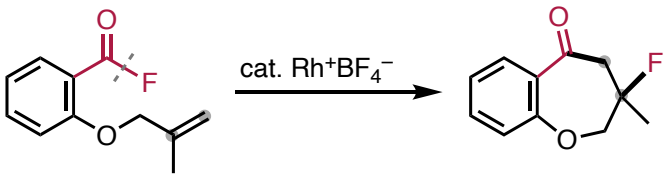
Organic fluorine compounds play an important role in diverse fields including materials, agrochemical, and pharmaceutical sciences.[1] The development of catalytic reactions that allow for the synthesis of complex fluorinated compounds in an efficient manner is the key to further advancement in these areas of research. If a carbon–fluorine bond in fluorinated molecules is cleaved and an alkene or alkyne can be inserted in a catalytic manner, it would offer a powerful tool for the synthesis of complicated organic fluorine compounds from simpler organofluorine building blocks with a 100% atom economy. Such an insertion reaction requires a catalyst that can mediate both cleavage and formation of a C–F bond, which represents a daunting challenge. In fact, only two examples of catalytic carbofluorination of unsaturated compounds via the activation of a C–F bond have been reported to date.[2,3] Herein, we report on intramolecular carbofluorination of alkenes using acyl fluorides via C–F bond cleavage, which is catalyzed by a rhodium tetrafluoroborate salt.[4]



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