Palladium-Catalyzed Enantioselective C(sp³)–H Fluorination

Significance: The presence of a C–F bond uniquely affects the physical and biological characteristics of molecules. The authors have developed a new direct method for synthesizing chiral organofluorines by palladium-catalyzed C(sp³)–H fluorination. Appropriate choice of a chiral transient directing group is key to the selective formation of the desired C(sp³)–F bond rather than the undesired C(sp³)–O bond.

Comment: Several mechanistic studies indicated that the desired C(sp³)–H fluorination proceeds by an inner-sphere pathway, whereas the undesired C(sp³)–O formation occurs through an S_N2-type mechanism.