Recent advances to access original fluorinated scaffolds

BESSET Tatiana

Normandie Univ, INSA Rouen UNIROUEN, CNRS, COBRA (UMR 6014), Rouen, 76000, FRANCE

Email: tatiana.besset@insa-rouen.fr - **web page**: www.lab-cobra.fr

Over the last years, the organofluorine research field has known a fast expansion,[1] which could be explained by the plethora of pharmaceuticals and agrochemicals containing at least one fluorine atom.[2] Consequently, a large panel of fluorinated groups (F, CF_3, SCF_3, …) is available and their introduction onto molecules can be realized by means of various transformations. Besides, transition metal catalyzed direct C-H bond functionalization has known tremendous progress over the last decade allowing new retrosynthetic disconnections and innovative approaches. The combination of organofluorine chemistry and the transition metal catalyzed C-H bond functionalization is really appealing and is considered as a powerful synthetic tool. However, the introduction of fluorine-containing groups on versatile alkenes as well as aliphatic derivatives by direct C-H bond functionalization is still scarce. To take up this challenge, we have developed innovative methodologies to access these important fluorinated building blocks. Transition metal catalyzed trifluoromethylation[3a] and trifluoromethylthiolation[3b,c] of vinylic and aliphatic amides were particularly studied. Besides, a special attention was paid to the development of modern strategies in organofluorine chemistry with a special focus on emergent fluorinated groups and the design of original electrophilic reagents. [3d, 3e]

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