“Palladium-catalyzed synthesis of α-trifluoromethyl-acrylates and acrylic acids, and some applications”

Professor Jean Philippe Bouillon

Laboratoire COBRA
Université de Rouen-Normandie
INSA Rouen Normandie

Abstract:
Organic molecules containing α-trifluoromethylacrylic acid scaffold played important roles in medicinal chemistry and material science and have acted as key building blocks for the synthesis of valuable trifluoromethyl chiral compounds and various polymers. Although such kind of scaffold is of high interest, only three methods have been reported for their synthesis, and all of these methods showed quite limited substrate scope.
Since we recently developed a method for the synthesis of alkyl α-trifluoromethylacrylacrylates, we reported a rapid and efficient method for the generation of α-trifluoromethylacrylic acids by ligand-free palladium-catalyzed Mizoroki-Heck reaction. This chemistry gave rise to moderate to excellent yield and exhibited good functional group tolerance. A one-pot three-component reaction between aryl iodine, 2-(trifluoromethyl)acrylic acid, and alkyl iodide was also explored to synthesis diverse trisubstituted acrylates. As applications, 3-CF_3-coumarins and CF_3-analogues of therapeutic or cosmetic agents were produced with α-trifluoromethylacrylic acids.