

Trifluoromethanesulfonic Acid in Organic Synthesis

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Abstract—The review analyzes data published in the past decade on the use of trifluoromethanesulfonic acid (triflic acid, CF₃SO₃H, TfOH) in organic synthesis, in particular in electrophilic aromatic substitution (Friedel–Crafts) reactions, formation of carbon–carbon and carbon–heteroatom bonds, isomerizations, syntheses of carbo- and heterocyclic structures, and other reactions, as well as in natural and organometallic compounds chemistry. The high protonating power and low nucleophilicity makes trifluoromethanesulfonic acid capable of generating from organic molecules cationic species which can be detected by spectral methods (NMR, IR spectroscopy, etc.), and their transformations can be studied. Experimental simplicity and efficiency of reactions promoted by trifluoromethanesulfonic acid make it a convenient reagent for the synthesis of new organic compounds.

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