Titanium-Mediated Cycloaddition

Significance: The authors describe a mild and efficient [3+2] cycloaddition of 2-(trifluoromethyl)-N-tosylaziridine to various nitriles using TiF₄ as a Lewis acid, to give the corresponding 4-(trifluoromethyl)-1,3-imidazolines in good yields and excellent regioselectivity.

Comment: From a mechanistic point of view, the authors assume that the aziridine is activated by TiF₄, which is then attacked by the nitrile to afford the betaine intermediate, which collapses to form the 1,3-imidazole.