1,2,3-Triazoles: From Metal- to Supramolecular Organic Catalysis

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1,2,3-Triazoles constitute usual heterocyclic ligands in biology and coordination chemistry. Although such structure is well known since the 19th century, the main breakthrough in triazole chemistry was made by the introduction of the “click” chemistry concept by Kolb, Finn and Sharpless.[1] The 1,2,3-triazole is an intriguing heterocycle, with really interesting intrinsic properties such as a highly polarized C-H bond, a large dipole moment and a notable acidity character of the C-H bond. These special features make possible different supramolecular interactions: from metal (M) coordination to anion (A⁻) complexation.[2]

Based on these properties, my group has recently designed novel 1,2,3-triazoles-based ligands and catalysts. In this lecture, some of our results on the use of triazole-based catalysts in Lewis acid metal catalysis,[3] counter-anion catalysis[4] and cooperative H-donor-based anion-binding organocatalysis[5] will be presented.