

Научный семинар кафедры органической химии

Development of Novel Transition Metal-Catalyzed Synthetic Methodologies

A set of novel efficient transition metal-catalyzed methodologies for synthesis of multisubstituted carbo- and heterocycles has been developed [1-17]. Commonly, regioselective synthesis of carbo- and heterocycles possessing various functional groups is not a trivial task. We have shown, however, that incorporation of migrating step(s) in the cyclization cascade often helps solving this problem. Thus, it was found that in the presence of Cu-, Ag-, and Au catalysts, a number of groups, such as Hal-, RS-, AcO-, TsO-, Ar-, SiR_3, and BR_2 could undergo 1,2- or 1,3-migration, or in some cases even double migration, which allows for expeditious synthesis of densely-functionalized carbo- and heterocycles, which are not easily accessible via existing techniques.

We have also explored a direct Pd-catalyzed C-H functionalization approach toward synthesis of multisubstituted aromatic and heteroaromatic molecules [18-28]. Thus, a novel silicon-tether approach for the Pd-catalyzed C-H arylation has been developed. Next development involved employment of the PyDipSi-, PyrDipSi, and a silanol, the Si-tethered directing groups for the Pd-catalyzed C-H functionalization reactions. These groups are traceless or can easily be converted into a variety of useful functionalities.

The scope of these transformations will be demonstrated and the mechanisms will be discussed.

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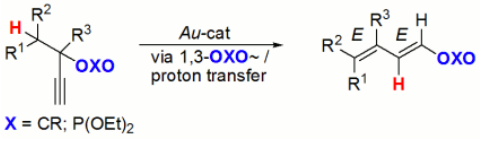

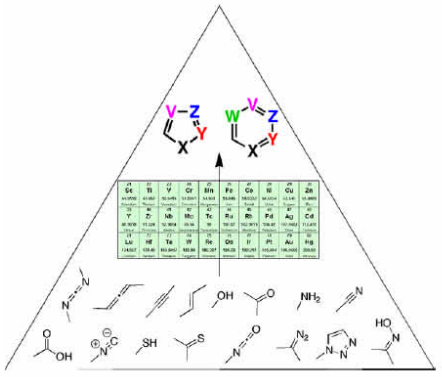

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