Mesoionic carbene-Pd complexes. New synthetic methodology, structures and catalytic activities of 1,2,3-triazol-5-ylidene-Pd complexes

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N-Heterocyclic carbenes (NHCs) as ligands have dominated the chemistry of transition and lanthanide ions during the past decade, so much so that they have replaced the conventional phosphane ligands. Among the NHCs imidazol-2-ylidenes (normal NHC) and 1,2,3-triazol-5-ylidenes(mesoionic NHC) have gained prominence. We have been interested in 1,2,3-triazol-5-ylidene-Pd chemistry. We have developed a new methodology for their synthesis under base-free and silver-free conditions. We have synthesized several chiral 1,2,3-triazol-5-ylidene-Pd complexes. They have been shown to be useful for the asymmetric catalytic hydrogenation reaction of prochiral olefins and chemoselective hydrogenation of alkenes and alkynes. In this presentation some newer aspects of the synthesis, structures and catalytic activities of the 1,2,3-triazol-5-ylidene-Pd complexes will be discussed.