Nitrogen Intermediates In C-X Bond Formation Reaction

Ankita Bal, Prasenjit Mal*, National Institute of Science Education and Research, India

Abstract (300 word limit)

Hypervalent iodine compounds are widely used as potential oxidant in organic synthesis. In spite of similar reactivity with transition metals, hypervalent iodine reagents[1] are more preferred because of their environmental sustainability. Among several types of hypervalent iodine reagents, trivalent organo iodine(III) reagents or λ^3- iodanes are popular due to their easy accessibility, stability and controlled oxidizing reactivity.[2] Amines react with iodine(III) oxidants in some specific way to provide divalent electrophilic ionic species, called as nitrenium ion. Depending on the nature and stability of nitrenium ion, numerous oxidative transformations are known to generate valuable functional molecules. In accordance with the above principle, biarylsulfonamides were used to generate nitrenium ion using the hypervalent iodine(III) reagent PIDA. Depending on the type of nucleophile, nitrenium ion is converted to carbenium ion which leads to synthesis of C-C or C-N bond.[4] The deciding factor in the outcome of a reaction is guided by the nucleophile available in the system. Herein, the role of hypervalent iodine(III) reagent in bringing about oxidative transformation and synthesis of carbazoles by distal (meta) C-H bond functionalization will be discussed.

Recent Publications

1. **Bal, A.; Maiti, S.; Mal, P.** Iodine(III) Enabled Distal C-H Functionalization of Biarylsulfonanilides J. Org. Chem., 2018,83,11278-11287.
2. **Bal, A.; Maiti, S.; Mal, P**. Steric and Electronic Effect on C2-H Arylation of Sulfonamides ChemistrySelect 2019, 4, 7010-7014
3. **Bal, A.; Maiti, S.; Mal, P.** Strategies to Control Hypervalent Iodine – Primary Amine Reactions (https://doi.org/10.1002/asia.201901683).
4. **Maiti, S.#; Alam, M. T.#; Bal, A.#; Mal,** P. Nitrenium Ions from Amine-Iodine(III) Combinations Adv. Synth. Catal. 2019, DOI: 10.1002/adsc.201900441
5. **Bal, A.; Maiti, S.; Mal, P.** Highly Selective Inter- or Intramolecular Dehydrogenative C-C or C-N Coupling Reactions by Stereoelectronic Control (*manuscript submitted*)



Biography

Ankita Bal has completed her B.Sc and M.Sc from West Bengal State University in 2012 and 2014 respectively. She joined National Institute of Science Education and Research (NISER), in 2015 and is currently working as a final year Ph.D student under the supervision of Prof. Prasenjit Mal. Her research area is focussed on metal free C-C, C-N bond synthesis mediated by hypervalent iodine reagents

Email: ankita.bal@niser.ac.in

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