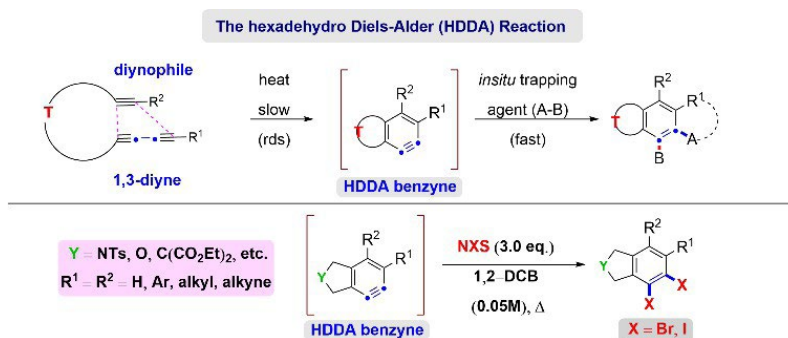


## The vicinal-diiodination of the HDDA-benzynes by N-Iodo- succinimide

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The HDDA reaction forms polycyclic benzyne intermediates via [4+2] cycloaddition between tethered alkyne and 1,3-diyne, yielding complex benzenoid products after trapping reactions.<sup>1,2</sup> We devised and developed a versatile method for crafting dihaloarenes by trapping HDDA benzynes using N-halosuccinimides respectively. Here, the iodine- radical trapping reaction of the HDDA-benzynes for the construction of structurally divergent vicinal-diiodo arenes has been discovered and developed. Under thermal conditions, the N-iodosuccinimide was employed as the source of iodine radicals. EPR spectral analysis of the reaction mixture helped us to prove the existence of the radical intermediates and supported the proposed radical mechanism. A series of fruitful control experiments suggested that the 4-iodination (mono-) of the HDDA-benzynes is faster than the 5-iodination for both tetraynes as well as triynes. The iodine radical trapping reaction of the HDDA-benzynes was found to be faster than many of the intermolecular trapping reactions. The process is very broad in terms of the nature of the tethering units and substituents on the diynes. To the best of our knowledge, this is only the third report on the 1,2-diradical reactivity of the HDDA-benzynes and first one with experimental support for the radical mechanism.<sup>4</sup> This presentation unveils our effort towards HDDA arynes using halogen based reagents.



### Biography

Siddique Khan is a research scholar pursuing his doctoral studies (Ph.D.) under the supervision of Prof. Beeraiah Baire. He joined the Department of Chemistry, at IIT Madras in Jan 2019. His research focuses mainly on strategies for halogenation of the hexadehydro Diels-Alder reaction based Benzynes.

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