

Invited Lecture

57th Annual Convention of Chemists (ACC) - Indian Chemical Society (ICS) Recent Trends in Chemical Sciences (RTCS 2020)

Caged Phosphines: Fascinating Journey from Academia to Industry

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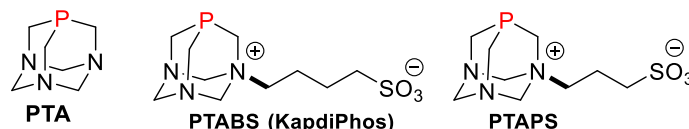
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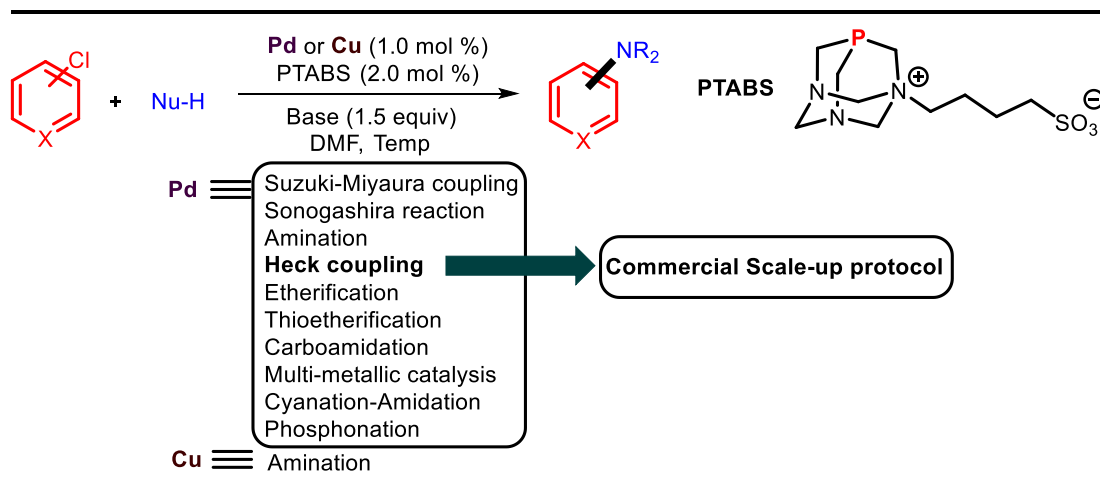
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Abstract: Phosphines as activating ligands have, in combination with transition metals, played an important role in the development of sustainable catalytic solutions for academia as well as industrial applications. Caged phosphines are a class of phosphines possessing three-dimensional scaffolds and capable of providing unique control over steric and electronic properties. The versatility of the caged phosphine ligands has been demonstrated elegantly by the groups of Verkade, Gonzalvi as well as Stradiotto.¹ Our contribution to this area comes in the form of the 1,3,5-triaza-7-phosphaadamantane-based caged ligands, especially PTABS (KapdiPhos) that has proved to be a revelation in promoting heteroarene functionalization in a highly efficient way. The talk will therefore be centered around the journey from the development of the ligand to the varied applications including scale-up possibilities, eventually culminating into its commercialization.²

Figure: Triazaphosphadamantane-derivatized caged ligands



Scheme:



References and Notes:

1. Zablocka, M.; Hameau, A.; Caminade, A.-M.; Majoral, J.-P. *Adv. Synth. Catal.* **2010**, *352*, 14-15
2. a) Gayakhe, V.; Ardhapure, A. V.; Kapdi, A. R.; Sanghvi, Y. S.; Serrano, J. L.; Garcia, L.; Perez, J.; Garcia, J.; Fischer, C.; Schulzke, C. *J. Org. Chem.* **2016**, *81*, 2713-2729 b) Murthy Bandaru, S.; Bhilare, S.; Chrysochos, N.; Gayakhe, V.; Trentin, I.; Schulzke, C.; Kapdi, A. R. *Org. Lett.* **2018**, *20*, 473-476. c) Bhilare, S.; MuthryBandaru, S.; Shah, J.; Chrysochos, N.; Schulzke, C.; Sanghvi, Y. S.; Kapdi, A. R. *J. Org. Chem.* **2018**, *83*, 13088-13102.

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