Tata Institute of Fundamental Research
Survey No. 36/P, Gopanpally Village, Serilingampally, Ranga Reddy Dist., Hyderabad - 500107

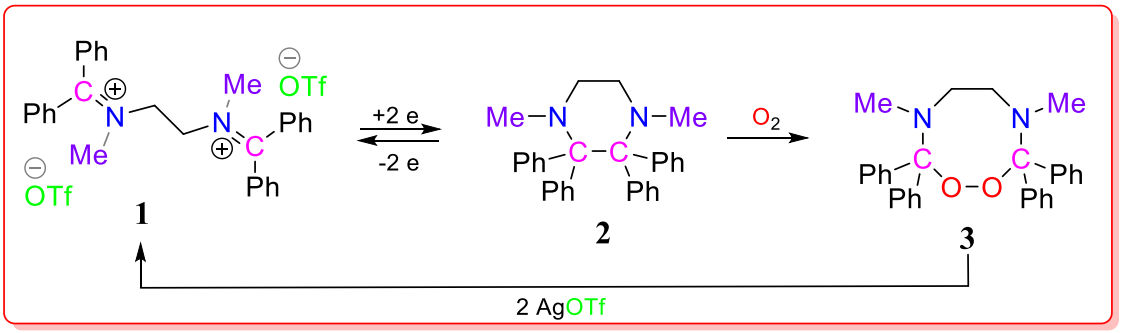
Internal Webinar

Reversible Reductive Cyclization of N, N'-Ethylene Bridge Iminium Dications to Piperazines: Fixation of O_2 Across $C(sp^3)$-$C(sp^3)$ Bond

Rahul Kumar

TIFR-Hyderabad

Molecular-level multi-electrons handling towards electrical storage is a worthwhile approach to solar energy harvesting.[1] Here we will present our new findings for the redox properties of N,N'-ethylene bridged Iminium dication 1. Compound 1 reversibly form 2 which reacts with molecular oxygen under the formation of cyclic peroxide 3. The fixation of O_2 by compound 2 represent the first addition across $C(sp^3)$-$C(sp^3)$ bond. Interestingly compound 3 oxidized to 1, the fate of oxygens of the peroxide motif will also be discussed. Moreover, we will also present the redox chemistry of other variety of N,N'-ethylene bridged iminium dications.



References:

1. A. Gosset, L. Wilbraham, S. N. Lachmanová, R. Sokolová, G. Dupeyre, F. Tuyèras, P. Ochsenbein, C. Perruchot, H.-P. J. de Rouville, H. Randriamahazaka, L. Pospíšil, I. Ciofini, M. Hromadová, P. P. Lainé. J. Am. Chem. Soc. 2020, 142, 5162−5176.

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