

Seminar

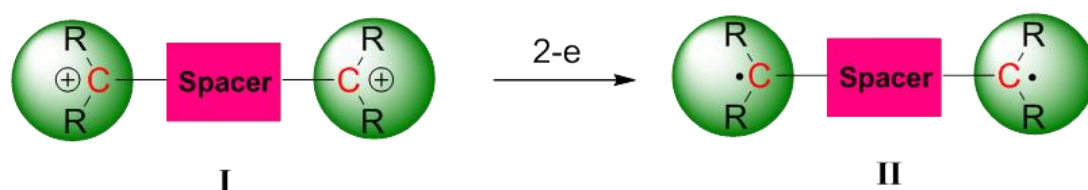
Rationally Designed Carbene-Based Kekulé and non-Kekulé Diradicals

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Organic carbon-centred radicals are an important class of compounds which are involved in various chemical and biological processes.^[1] In recent years, the synthesis of molecules having multiple centres of carbon radicals is considerably increased for the design of high-spin organic ferromagnetic materials and their potential applications in several fields of modern chemical physics, e.g., in singlet fission, molecular electronics, nonlinear optics, and dihydrogen activation.^[2]

We have developed a general synthetic methodology^[3] for the synthesis of various carbene such as cyclic(alkyl)(amino)carbene,^[4] acyclic diaminocarbene, diamido carbene, and acyclic(aryl)(amino)carbene-based Kekulé and non-Kekulé diradicals (II) from corresponding dications (I). We have also developed a synthetic methodology for heteronuclear carbon and boron centred based diradicals.



Reference:

1. a) P. Renaud, M. P. Sibi, Radicals in Organic Synthesis, Wiley-VCH, Weinheim, 2001; b) B. Halliwell, J. M. C. Gutteridge, Free Radicals in Biology and Medicine, 5th ed., Oxford University Press, Oxford, 2015.
2. See selected review: a) M. Abe, Chem. Rev. 2013, 113, 7011-7088; b) T. Stuyver, B. Chen, T. Zeng, P. Geerlings, F. D. Proft, R. Hoffmann, Chem. Rev. 2019, 119, 11291-11351.
3. D. Mandal, S. Sobottka, R. Dolai, A. Maiti, D. Dhara, P. Kalita, R. S. Narayanan, V. Chandrasekhar, B. Sarkar, A. Jana, Chem. Sci. 2019, 10, 4077-4081.
4. A. Maiti, J. Stubbe, N. I. Neuman, P. Kalita, P. Duari, C. Schulzke, V. Chandrasekhar, B. Sarkar, A. Jana, Angew. Chem. Int. Ed. 2020, 59, DOI: 10.1002/anie.201915802.

Wednesday, Mar 18th 2020

4:00 PM (Tea/Coffee at 3:30 PM)

Auditorium, TIFR-H