Tata Institute of Fundamental Research
Survey No. 36/P, Gopanpally Village, Serilingampally, Ranga Reddy Dist., Hyderabad – 500 046

Students' Annual Seminar

Diboron-Based Neutral Diradical and Carbon/Nitrogen-Based Diradicaloid

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Diradicals having the non-bonding electrons at the electron-deficient centres such as boron are not well explored.[1] In case of diradicals, *m*-xylylene is one of the classic examples where the chemistry m-xylylene and its derivatives are well known.[2] However, the corresponding boron analogue are not well explored and only one report of diboron-based diradical known which is dianionic.[3]

On the other hand, diradicaloids are known considering the combination of non-bonding electrons centres at boron/boron, carbon/carbon, nitrogen/nitrogen, boron /carbon, and boron/nitrogen centres in the benzoid resonance form.[4] However, the combination of carbon/nitrogen-centres are not known most likely due to the lack of proper carbon-centre motif which can oxidise to the open-shell form.

References:

[1] Y. Su, R. Kinjo, *Coord. Chem. Rev.* **2017**, *352*, 346-378.
[2] a) A. Rajca, S. Rajca, *J. Chem. Soc., Perkin Trans. 2* **1998**, 1077–1082; b) S. Utamapanya, A. Rajca, *J. Am. Chem. Soc.* **1991**, *113*, 9242–9251; c) A. Rajca, S. Utamapanya, *J. Org. Chem.* **1992**, *57*, 1760–1767
[3] A. Rajca, S. Rajca, S. R. Desai, *J. Chem. Soc. Chem. Commun.* **1995**, 1957.
[4] a) J. Fiedler, S. Zališ, A. Klein, F.M. Hornung, W. Kaim, *Inorg. Chem.* **1996**, *35*, 3039; b) Jana et. al. *J. Am. Chem. Soc.* **2021**, *143*, 10, 3687–3692; c) A Maiti, S Chandra, B Sarkar, A Jana, *Chem. Sci. 2020, 11* (43), 11827-11833; d) Y. Su et. al., *Chem. Commun.* 2022, 58, 5391- 5394.

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3:00 PM

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