

Seminar

Rationally Designed Iminium Cations and Bis-Alkenes for the Synthesis of Radicals, Diradicaloids, and Diradicals

Priyanka Saha

TIFR, Hyderabad

After Gomberg's report on the formation of triphenylmethyl radical in 1900,^[1] the chemists have been interested on the isolation of carbon-centred radicals, diradicals, and diradicaloids due to their interesting electronic and photophysical properties.^[2] In this scenario we were interested to make thienyl substituted carbon-centre radical motif for the isolation of diradicaloids. At the same time, we were interested to have crystalline diradical with *m*-phenylene bridge as in the case of Schlenk hydrocarbon.^[2(e)] Accordingly, here I will present the modular designing strategy and subsequent synthesis of radicals and diradicaloids considering iminium cations as synthons. Related to this we have also developed photo-switchable bis-iminium cations considering dithienylethene-core.^[3] Also, I will present the synthetic strategy and subsequent isolation of dicationic Schlenk hydrocarbon derivatives by employing bis-alkenes under two-electron oxidation process.^[4]

References:

[1] Gomberg *et al.*, *J. Am. Chem. Soc.* 1900, 22, 757–771.

[2] Selected references are: (a) Chen *et al.*, *Chem.* 2021, 7, 288–332; (b) Abe *et al.*, *Chem. Rev.* 2013, 113, 7011–7088; (c) Hu *et al.*, *J. Mater. Chem. C Mater. Opt. Electron. Devices* 2018, 6, 11232–11242; (d) Schlenk *et al.*, *Justus Liebig's Ann. Chem.* 1910, 372, 1–20; (e) Schlenk *et al.*, *Ber. Dtsch. Chem. Ges.* 1915, 48, 661–669; (f) Thiele *et al.*, *Ber. Dtsch. Chem. Ges.* 1904, 37, 1463–1470; (g) Tschitschibabin *et al.*, *Ber. Dtsch. Chem. Ges.* 1907, 40, 1810–1819.

[3] Matsuda *et al.*, *J. Photochem. Photobiol. C: Photochem. Rev.* 2004, 5, 169–182.

[4] Saha *et al.*, *Angew. Chem. Int. Ed.* 2023, 62, e202311868.

Friday, May 24th 2024

11:30 Hrs (Tea / Coffee 11:15 Hrs)

Auditorium, TIFR-H