

## Seminar

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

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Since the discovery of the triphenylmethyl radical by Gomberg in 1900,<sup>[1]</sup> the exploration of carbon-centred radicals, diradicals, and diradicaloids has captivated chemists due to their striking electronic structures and photophysical properties.<sup>[2]</sup> Our research focuses on developing thienyl-substituted radicals and thienylene-bridged diradicaloids along with triplet diradicals.

In this seminar, I will showcase a modular design for the synthesis of various iminium cations as immediate synthons under reductive condition for isolable crystalline thienyl-substituted radicals and thienylene-bridged diradicaloids. Additionally, I will showcase the integration of thienyl-substituted iminium cations under photo-switchable dithienylethene core.<sup>[3]</sup> Moreover, I will present the synthesis and isolation of crystalline dicationic Schlenk hydrocarbon derivatives as triplet diradicals utilising alkenic-motif as the source of open-shell centre.<sup>[4]</sup>

#### **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 Liebigs 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, Dec 20<sup>th</sup> 2024**

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

**Auditorium, TIFR-H**