

Internal Seminar

Controlling the triplet dynamics for long-lived room temperature phosphorescence in metal and lone air-free triarylborane-based regio-isomers

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The development of long-lived room-temperature phosphorescence (RTP) in purely organic materials without the involvement of heavy metals or lone pairs is a challenging yet promising avenue in material science [1]. Herein, we report the design and synthesis of a series of regio-isomeric triarylborane-based acceptor-acceptor (A-A) compounds, which exhibit efficient control over triplet dynamics leading to long-lived RTP. These are air-, and moisture-stable and are soluble in organic polar solvents. These compounds were characterised by multinuclear nmr spectroscopic methods as well as single-crystal X-ray diffraction analysis. The photophysical properties of these compounds are being investigated.

References:

1. a) Y. Huang, L. Ning, X. Zhang, Q. Zhou, Q. Gong and Q. Zhang, Chem. Soc. Rev., **2024**, 53, 1090. b) Z. Liu, D. Li, L. Tong, Y. Meng, M. Fang, J. Yang, B. Z. Tang, and Z. Li, Adv. Optical Mater. **2023**, 11, 2203069. c) R. Arumugam, A.T. M. Munthasir, R. Kannan, D. Banerjee, P. Sudhakar, V. R. Soma, P. Thilagar, and V. Chandrasekhar, Chem. Sci., **2024**, 15, 18364. d) Z. Wu, J. Nitsch, J. Schuster, A. Friedrich, K. Edkins, M. Loebnitz, F. Dinkelbach, V. Stepanenko, F. Wgrthner, C. M. Marian, L. Ji, and T. B. Marder, Angew. Chem. Int. Ed. 2020, 59, 17137 – 17144.

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14:30 Hrs

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