



# INDIAN ASSOCIATION FOR THE CULTIVATION OF SCIENCE

2A & 2B, Raja S. C. Mullick Road, Jadavpur, Kolkata-700 032

School of Materials Science

## SEMINAR NOTICE

### Materials Science Seminar

**Speaker:** Avik K. Pati<sup>1</sup>

**Title of the Talk:** Ultrastable organic dyes for single-molecule research

**Date:** 17 June 2025, 11:30 AM, <sup>1</sup>Department of Chemistry, Birla Institute of Technology and Science, Pilani, Rajasthan - 333031, India

**Online Link:** <https://meet.google.com/ccx-sggg-rko>

**Abstract:** Single-molecule fluorescence resonance energy transfer (smFRET) methods seek to measure conformational changes in individual biomolecules [1]. Photophysical performances of organic dyes routinely used in smFRET imaging applications are compromised by their transient excursions to long-lived dark triplet states causing stochastic blinking and irreversible photobleaching. Here, we will discuss that robust intramolecular triplet state quenching strategies [2,3] that reliably reduce the inherent duration of triplet states of dyes have the potential to improve the robustness of smFRET imaging and thereby enable FRET-based initiatives across imaging platforms at sub-millisecond timescales and angstrom-scale spatial regimes [4].

[1] Lerner et al., *Science*, 359, eaan1133 (2018).

[2] Altman et al., *Nat. Methods*, 9, 68–71 (2011).

[3] Pati et al., *PNAS*, 117, 24305–24315 (2020).

[4] Pati et al., *Nat. Methods*, 21, 1222–1230 (2024).

**All are cordially invited to attend the Seminar.**