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Notice for the PhD Viva Voce Examination

Mr Francis Joy, Registration Number: 2090188, PhD Scholar at the Department of Chemistry, School of Sciences, CHRIST (Deemed to be University) will defend his PhD thesis at the public viva-voce examination on Wednesday, 04 February 2026 at 10.00 am in Room No. 044, Ground Floor, R&D Block, CHRIST (Deemed to be University), Bengaluru - 560029, Karnataka, India.

Title of the Thesis	:	**Synthesis, Photoluminescent Properties and Applications of Stimuli Responsive Organic Luminogens**
Discipline	:	**Chemistry**
External Examiner - I	:	**Dr Supriya Shet Tilvi** Principal Scientist Department of Chemical Oceanography CSIR - National Institute of Oceanography Dona Paula - 403004 Goa
External Examiner - II	:	**Dr Dhanya Sunil** Professor Department of Chemistry Manipal Institute of Technology Manipal University Karnataka - 576104
Supervisor	:	**Dr Aatika Nizam** Associate Professor Department of Chemistry School of Sciences CHRIST (Deemed to be University) Bengaluru - 560029 Karnataka

The members of the Research Advisory Committee of the Scholar, the faculty members of the Department and the School, interested experts and research scholars of all the branches of research are cordially invited to attend this open viva – voce examination.

Place: Bengaluru
Date: 27 January 2026

Registrar (Academics)

Registrar (Academics)
CHRIST (Deemed to be University)
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ABSTRACT

Fluorescent probes based on excited-state intramolecular proton transfer (ESIPT) Schiff bases have garnered significant interest due to their unique photophysical properties and broad applicability. This research focuses on the synthesis, characterization, and application of ESIPT-based organic luminogens, emphasizing their stimuli-responsive luminescence for metal ion detection, biomolecule sensing, and environmental monitoring. A series of ESIPT- active salicylaldehyde Schiff bases were synthesized and evaluated for their ratiometric sensing capabilities in detecting biologically relevant analytes. These Schiff bases demonstrated excellent selectivity and sensitivity toward metal ions, including magnesium and iron, making them promising candidates for fluorescence-based analytical technologies. Further, the study explores the formation of self-assembled fluorescent organic nanoparticles (SFONs), which exhibit aggregation-induced emission (AIE) properties, enhancing their fluorescence in aqueous environments. These nanoparticles were successfully applied for the detection of picric acid, a critical environmental pollutant, with high selectivity and a low detection limit. Additionally, a multi-stimuli responsive ESIPT luminogen was developed, displaying excitation-dependent emission and sensitivity to pH, solvent polarity, and analyte interactions. This property enabled its use in food safety applications, particularly in monitoring seafood freshness through biogenic amine detection. The probe was also integrated into solid-state sensing platforms for anti-counterfeiting applications, demonstrating its versatility in security and authentication technologies. This research highlights the multi-functional nature of ESIPT-based luminogens, offering significant advancements in real-time sensing, environmental analysis, and biomedical diagnostics. The findings pave the way for the development of next-generation fluorescent materials with enhanced selectivity, stability, and practical applicability in diverse analytical fields.

Keywords: *ESIPT, organic luminogens, Schiff bases, aggregation-induced emission, environmental pollutant, biogenic amines*

Publications:

1. **Francis Joy**, V. Aakash, Jyothis Devasia, and Aatika Nizam, "Excited-state intramolecular proton transfer (ESIPT) salicylaldehyde Schiff bases: ratiometric sensing of ammonia and biologically relevant ions in solution and solid state," Supramol Chem, Sep. 2024, doi: 10.1080/10610278.2024.2406269.
2. **Francis Joy**, V. Aakash, Jyothis Devasia, and Aatika Nizam, "Excited state intramolecular proton transfer dual emission Schiff bases for metal detection and cell imaging," Appl Spectrosc Rev, vol. 59, no. 7, pp. 959–988, 2024, doi: 10.1080/05704928.2023.2276925.