CHRIST
(DEEMED TO BE UNIVERSITY)
BANGALORE | DELHI NCR | PUNE

Notice for the PhD Viva Voce Examination

Ms Krishnapriya Jayan, Registration Number: 2290009, PhD Scholar at the Department of Chemistry, School of Sciences, CHRIST (Deemed to be University) will defend her PhD thesis at the public viva-voce examination on Saturday, 02 May 2026 at 10.30 am in Room No. 044, Ground Floor, R&D Block, CHRIST (Deemed to be University), Bengaluru - 560029, Karnataka, India.

Title of the Thesis	:	**Electrochemical Synthesis of Nitrogen and Sulphur Containing Heterocycles**
Discipline	:	**Chemistry**
External Examiner - I	:	**Dr Abraham Joseph** Professor Department of Chemistry University of Calicut Thenhipalam - 673635 Kerala
External Examiner - II	:	**Dr Suman Singh** Associate Professor Central Scientific Instruments Organization (CSIR-CSIO) Chandigarh - 160030
Supervisor	:	**Dr Anitha Varghese** 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.

Registrar (Academics)

Place: Bengaluru
Date: 17 April 2026

ABSTRACT

Electrochemical organic synthesis has gained significant traction in the past decade due to its environmentally friendly, sustainable, and economically viable methodology. Incorporation of a non-toxic, efficient, reusable, and eco-friendly electrocatalyst further enhances the sustainability of electro-organic transformations, thereby reducing the overall environmental impact of the procedure as opposed to conventional methods of synthesis. Consequently, electrochemical synthesis represents a powerful green strategy for the construction of fundamental core scaffolds of pharmaceutical and medicinal relevance. In the current research electrochemical strategies have been developed for the preparation of benzimidazoles and benzothiazoles at ambient conditions with low reaction durations. The electrocatalysts in this research were developed on carbon fiber paper substrates modified with redox mediators and polymers. The electrocatalysts were fabricated in two steps: electropolymerization of a polymer/copolymer onto the substrate, followed by immobilization of a metal–organic compound/ deposition of a noble metal. The modified electrodes were examined using topographical and electrochemical investigative techniques to validate their functionality. The optimized electrocatalysts enabled the synthesis of heterocyclic derivatives at potentiostatic conditions, in a green solvent using a three-electrode setup. Yields of 78–92% were achieved without the need for column purification. Given the importance of benzimidazoles and benzothiazoles as core structures in medicinal and pharmaceutical chemistry, this sustainable synthetic strategy offers a significant advancement toward green and scalable electrosynthesis.

Keywords: *electrocatalyst, electro-organic synthesis, heterocycles, potentiostatic*

Publications:

1. **K. Jayan** and A. Varghese, "Ferrocenyl aniline modified electrode for the electrochemical synthesis of 2-(4-methoxyphenyl)-1H-benzo[d]imidazole," Electrochim. Acta, vol. 498, p.144658, Sep. 2024, doi: 10.1016/j.electacta.2024.144658.
2. **K. Jayan** and A. Varghese, "Hemin-functionalised conducting polymer as a unique host matrix for the electrochemical synthesis of benzothiazole derivatives: A sustainable approach," Mol. Catal., vol. 588, p. 115521, Jan. 2026, doi: 10.1016/J.MCAT.2025.115521