



CHRIST
(DEEMED TO BE UNIVERSITY)
BANGALORE · INDIA

Notice for the PhD Viva-Voce Examination

Ms Laveena Mariet Veigas (Registration Number: 1981406), PhD scholar at the School of Sciences, CHRIST (Deemed to be University), Bangalore will defend her PhD thesis at the public viva-voce examination on Thursday, 09 January 2025 at 10.00 am in Room No. 044, Ground Floor, R & D Block, CHRIST (Deemed to be University), Bengaluru - 560029.

Title of the Thesis	:	Modified Multiwalled Carbon Nanotube Based Systems for Catalytic and Transparent Conducting Electrode Applications
Discipline	:	Chemistry
External Examiner - I	:	Dr A Sreekanth Professor Department of Chemistry National Institute of Technology Tiruchirappalli - 620015 Tamil Nadu
External Examiner - II	:	Dr Sreekumar Kurungot Scientist National Chemical Laboratory Dr Homi Bhabha Road Pune - 411021 Maharashtra
Supervisor	:	Dr Mothi Krishna Mohan Associate Professor Department of Sciences and Humanities (Engineering) School of Engineering and Technology CHRIST (Deemed to be University) Bengaluru-560074 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: 06 January 2025


Registrar

ABSTRACT

The drastic rise in energy and environmental issues necessitates the need of sustainable methods and materials. It is imperative to develop alternative fuels through sustainable methods to address the current energy crisis. Current data indicates that fossil fuels are the world's primary energy resources; however, their increased usage and limited availability are the main causes of the ongoing energy crisis. Catalysis is a sustainable technique that facilitates the production of industrially important fine chemicals from CO₂, biomass, CO, and others. Hydrogen is regarded as the future energy, and developing cost effective and sustainable electro and photo catalysts can advance the hydrogen economy. The environmental pollution is another serious concern the global scientific community is facing currently. Poor water, and air qualities due to urbanization and industrialization have significantly worsened the quality of life.

The integration of conventional techniques with photocatalysis can significantly enhance environmental pollution control efforts. The methods and materials that enhance the efficiency of the current technology sustainably have the potential to revolutionize the field. "Transparent conducting electrodes" are inevitable part of most of the devices we use in our daily lives. Nevertheless, the high cost and reduced performance of the established materials in this field demand for sustainable alternatives. Taking into account the aforementioned critical issues, the current study primarily concentrates on developing cost-effective and sustainable systems based on "multiwalled carbon nanotubes" for applications in "thermal catalysis", "photocatalysis", and "transparent conducting electrodes (TCEs)".

Keywords: *Co-grafting, Sulfonated Multiwalled Carbon Nanotubes, Transparent conducting electrodes, Heterojunction engineering, Density functional theory, Aldol condensation.*

Publications:

1. **Laveena Mariet Veigas**, Nithin Chandran, B Murali Krishna, Sunaja Devi K R, Mothi Krishna Mohan, "Heterojunction engineered MWCNT/Ag₃PO₄ via organic acid and its natural light-assisted photocatalytic efficiency," *Nano-Structures and Nano-Objects*, vol. 34, p. 100975 (2352-507X), 2023, doi: 10.1016/j.nanoso.2023.100975.
2. **Laveena Mariet Veigas**, Lokesh Ravi, Nagaraju Narasimhaiah, Kathyayini Nagaraju, Mothi Krishna Mohan, "In-Vitro Investigation of the α -Amylase Inhibition Activity of Bare Bis-Benzylidene-Cyclohexanone Synthesized by a Highly Selective Solvent-Free Route," *ChemistrySelect*, vol. 8, no. 47, p. e202301807 (1-15), 2023. doi: 10.1002/slct.202301807.
3. **Laveena Mariet Veigas**, Sunaja Devi K R, Sony J. Chundattu, Mothi Krishna Mohan, "Synergistic Co-grafting of multiwalled carbon nanotubes using SO₃H and choline chloride-urea in fabricating uniform thin films with enhanced visible light transparency and reduced sheet resistance," *Optical Materials (Amst)*, vol. 151, p. 115260 (0925-3467), 2024, doi: 10.1016/j.optmat.2024.115260.