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

Notice for the PhD Viva Voce Examination

Ms Sirichandana B, Registration Number: 2370078, 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 Friday, 20 November 2026, at 02.00 pm in Room No. 044, Ground Floor, R & D Block, CHRIST (Deemed to be University), Bengaluru - 560029, Karnataka, India.

Title of the Thesis	:	**Electrocatalytic Investigation of Biomass Derived Carbon Supported Nanomaterials for Water Splitting**
Discipline	:	**Chemistry**
External Examiner - I	:	**Dr Saidi Reddy Parne** Professor Department of Applied Sciences National Institute of Technology Goa - 403703
External Examiner - II	:	**Dr Prathibha Sharma** Professor Department of Energy Science and Engineering Indian Institute of Technology Bombay, Powai Mumbai - 400076
Supervisor	:	**Dr Gurumurthy Hegde** Professor (Former) 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: 05 November 2026

ABSTRACT

Hydrogen has become a highly important candidate as an alternative energy carrier and clean fuel, attracting significant global attention due to its potential to attain net-zero emission goals. Among the different production pathways, green hydrogen offers one of the most promising routes toward deep decarbonization. The sluggish kinetics of the water-splitting reaction result in overpotentials and reduced efficiency, necessitating the development of efficient electrocatalysts. In order to address this, the present work emphasizes on the development of transition metal borides and phospho-borides anchored on biomass-derived carbon as electrocatalysts for HER and OER, using facile synthesis techniques. Onion peel, Mulberry bark, Allium sativum peel and dried oil palm leaves were used as biomass precursors for carbon synthesis. The electrocatalysts were systematically characterized and electrochemical studies were performed to evaluate their performance and exhibited good electrocatalytic activity, paving the way toward efficient development of electrocatalysts for the green hydrogen generation. The use of renewable biomass resources as carbon precursors provides an eco-friendly and sustainable approach.

Keywords: Biomass-derived carbon, Transition metal borides/phospho-borides, Hydrogen Evolution Reaction (HER), Oxygen Evolution Reaction (OER)

Publications:

1. **B. Sirichandana**, R. Silviya, U. Sirimahachai, N. Patel, and G. Hegde, "Biowaste-derived porous nano-carbon-supported transition metal borides as efficient electrocatalysts for alkaline water splitting: a waste-to-wealth approach," RSC Adv., vol. 15, no. 51, pp. 43275–43283, Nov. 2025, doi: 10.1039/d5ra05923b.
2. **B. Sirichandana**, R. Silviya, S. V. Bhat, N. Patel, and G. Hegde, "Biomass-derived carbon supported cobalt-phospho-boride as a bifunctional electrocatalyst for enhanced alkaline water splitting," Nanoscale Adv., vol. 7, no. 13, pp. 4056–4066, Jun. 2025, doi: 10.1039/d5na00213c.
3. **B. Sirichandana**, Jyothi, S. Swain, and G. Hegde, "Biomass-derived carbonaceous materials for electrocatalysis: A review," J. Electrochem. Soc., Jan. 2026, doi: 10.1149/1945-7111/ae32b1.