## Registration

The participants can register using the following link. There is no registration fee for the value added program. The program will be conducted on hybrid mode. Certificate will be provided after successful completion of the program.

https://lnk.ink/GaHpc

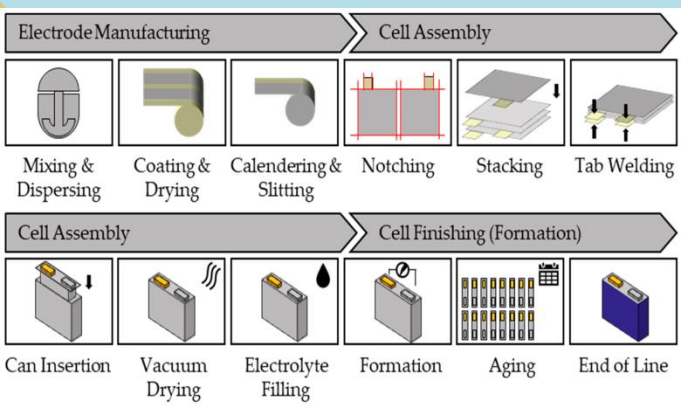
**Target audience**: Faculty members, PhD sholars, M.Tech, MS and B.Tech students.


In case of any queries, please contact:

**Dr. Chinmaya Prasad Mohanty**

**Mobile: +91–9438480248**

**Email: cprasad.mohanty@vit.ac.in**


## Chief Patron

**Dr. G. Viswanathan,** Chancellor

## Patrons

**Mr. Sankar Viswanathan,** Vice-President

**Dr. Sekar Viswanathan,** Vice-President

**Dr. G V Selvam,** Vice-President

**Dr. Sandhya Pentareddy**, Executive Director

**Ms. Kadhambari S. Viswanathan**, Assistant Vice-President

## Co-Patrons

**Dr. V S Kanchana Bhaaskaran,** Vice Chancellor

**Dr. Partha Sharathi Mallick,** Pro-Vice Chancellor

**Dr. T. Jayabarathi,** Registrar

## Convenor

**Dr. Kuppan P,** Dean-SMEC, VIT, Vellore

## Co-Convenor

**Dr. K. Nanthagopal,** Associate Dean, SMEC, VIT, Vellore

**Dr. Rajyalakshmi G,**

HOD, Manufacturing Engineering, SMEC, VIT, Vellore

**Dr. Jose S,** HOD, Thermal and Energy Engineering, SMEC, VIT, Vellore

**Dr. Govindha Rasu N,** HOD, Automotive Engineering, SMEC, VIT, Vellore

**Dr. Manikandan M,** HOD, Design and Automation, SMEC, VIT, Vellore

## Co-ordinators

**Dr. Chinmaya Prasad Mohanty,** SMEC, VIT, Vellore

**Dr. Tapano Kumar Hotta,** SMEC, VIT, Vellore

**Dr. Aruna Kumar Behura,** SMEC, VIT, Vellore

**Dr. Bibhuti Bhusan Sahoo,** SMEC, VIT, Vellore

VIT®
Vellore Institute of Technology
(Deemed to be University under section 3 of UGC Act, 1956)

# Value Added Program
## *on*
# Selection and Manufacturing aspects of Electric Vehicle Battery Materials

***28th July – 1st August 2025***

***Venue: MB 210-28th July and 30th – 1st August 2025***

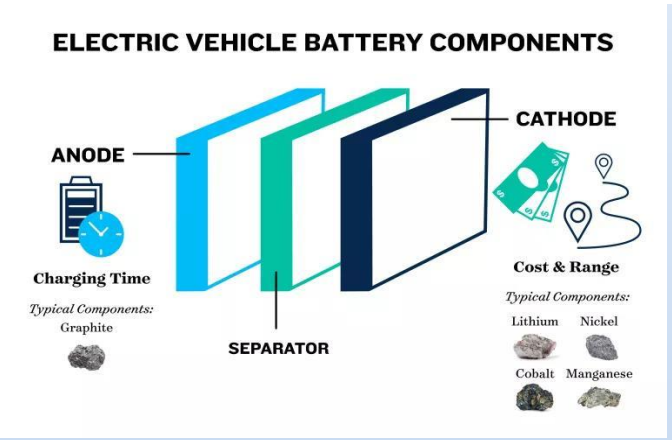
***CDMM 304-29th July 2025***

**Supported By**

BRITISH COUNCIL

Teesside University

wipro 3D




***Organised by***

School of Mechanical Engineering
Vellore Institute of Technology, Vellore, India

Sponsored
by
**British Council, UK,**
**Going Global Partnership Scheme**

## Vellore Institute of Technology (VIT)

Vellore Institute of Technology was founded in 1984 as Vellore Engineering College by the Founder and Chancellor Dr.G.Viswanathan. University status was conferred in 2001 by MHRD Govt. of India in recognition of its excellence in academics, research and extracurricular initiatives.

### Ranking & Accreditation

VIT has emerged as one of the best institutes of India and is aspiring to become a global leader. Quality in teaching-learning, research and innovation makes VIT unique.

- Engineering and Technology subject areas of VIT are the 142$^{th}$ best in the World and the 9$^{th}$ best in India, and eight subjects of VIT are within the top 200 in the world (as per QS World University Rankings by Subject 2025).
- The 10$^{th}$ best University, the 13$^{th}$ best research institution and the 11$^{th}$ best engineering institution in India (NIRF Ranking, Govt. of India 2024).
- 2$^{nd}$ in India and 501-600 in the world (Shanghai ARWU Ranking 2024).
- NAAC Accreditation with A++ grade (3.66 out of 4).
- 396$^{th}$ in the world and 8$^{th}$ in India (QS World University Rankings: Sustainability 2025)

## School of Mechanical Engineering (SMEC)

The School of Mechanical Engineering is one of the oldest and most prestigious schools of VIT. This school started functioning right from 1984, the year in which our institution began. The School of Mechanical Engineering offers 3 undergraduate and 6 post-graduate programs. The school has a team of highly qualified faculty members, many holding PhDs from elite institutes across the globe, to teach and train this country's best minds. The pride of the school lies in the significant research funding received from several National and International agencies such as DST, DRDO, MNRE, CSIT, CVRDE, CPDO, IE, AR&DB, BRNS, ISRO, UGC, NRB, Royal Academy of Engineering etc. The Department of Science and Technology, Govt. of India has recognized the school for its research activities and supported it in 2003, 2010 and 2022 under the FIST scheme. The school has modern facilities, enabling cutting-edge research in a wide spectrum of niche technological areas. The school is ranked 501-600 in the World as per THE World University Subject Ranking in 2024. Mechanical and Manufacturing Engineering is ranked within the top 10 in India and top 201-250 in the world as per QS World University Rankings by Subject 2024. This School got NBA accreditation on 2025 for 6 years.

## Introduction to the Value Added Program

In India, the EV sector is expected to grow by 45 - 50% by 2030. The government policy mandates automakers to invest a minimum of £389.4 million within three years, aligning with the "Atma Nirbhar Bharat" initiative, fostering self-reliance. In 2024, UK mandated car manufacturers to produce zero-emission vehicles, starting at 22% sales in 2024, and reaching 100% by 2035. The battery is a critical EV component, and its material and manufacturing are pivotal in determining the wider adoption of EVs. This has created a need for a capacity-building task force across the globe to strengthen start-ups, business hubs, and employability. The proposed project addresses the net-zero and next-generation automotive sector and encourages industry-academia collaboration to promote excellence in higher education (HE) and develop a work-ready workforce.

The major objectives of this program:

Innovate sustainable battery material selection and manufacturing: using deep learning approach. This will lead to improved performance and cost reduction. Value added program targets UG and PG students, Faculties, Research Scholars and young entrepreneurs.

The focus of the indicative contents will be battery design, battery materials, battery manufacturing and development of machine learning for battery development.

## Technical Program

This Value Added Program will support sustainability goals (SDG 7) by focusing on the development of EV battery materials and sustainable manufacturing techniques, which are crucial for reducing greenhouse gas emissions in the transportation sector. By enhancing the efficiency and sustainability of EV batteries, the program will contribute to the broader effort to transition to clean energy and reduce carbon footprints. The deep learning-based framework for selecting EV battery materials represents a significant advancement in both the fields sustainable technology. This innovative approach not only contributes to academic knowledge but also has practical implications for the EV industry, aligning with the University's emphasis on impactful research on net-zero and sustainable technologies, which includes:-

- EV Batteries
- Battery Materials and Manufacturing
- Challenges and Commercialization of EV Battery
- Modeling and Policy-Making Processes in EV

## Program

| Day 1 | 28$^{th}$ July, 2025 |
|---|---|
| 09.30 – 09.50 | Registration |
| 09.50 – 10.00 | Welcome and Inaugural Programme |
| 10.00 - 12.30 | Dr. Patchigolla, Kumar, Teesside University. **"Minerals mining and battery recycling approaches"** |
| 12.30 - 02.00 | Lunch Break |
| 02.00 - 04.30 | Dr. Al-Greer, Maher, Teesside University. **"AI for Smarter Battery Management Systems: Enhancing Safety, Performance, and Lifespan"** |
| **Day 2** | **29$^{th}$ July, 2025** |
| 10.00 - 12.30 | Dr. Ranjith Thangavel, IIT Guwahati. **"Next-generation Materials for Sodium-ion based Energy Storage Systems with High Energy Density"** |
| 12.30 - 02.00 | Lunch Break |
| 02:00 – 03:30 | Dr. Ram Mohan, VIT Vellore. **"Case studies on EV applications"** |
| 03.30 - 04.30 | Dr. Tapano Kumar Hotta, VIT Vellore. **"Structural and Chemical Behavior of EV Battery Material During Charging and Discharging"** |
| **Day 3** | **30$^{th}$ July, 2025** |
| 10.00 - 11.00 | Dr. Chinmaya Prasad Mohanty, VIT, Vellore. **"Electrode preparation (mixing, coating, drying) Electrode stacking or winding (cylindrical, prismatic, pouch cells), Electrolyte filling and formation"** |
| 11:000-12.30 | Dr. Aparna Mohanty, VIT Vellore. **"Deep learning based application on Electrical, thermal, and mechanical testing, Formation cycling and aging "** |
| 12.30 - 02.00 | Lunch Break |
| 02.00 - 04.30 | Dr. Indrajit Sarkar, NIT Rourkela. **"Electric Vehicle (EV) in the automotive sector, Fundamentals of EV Batteries, Battery Chemistry Overview of Anode, Cathode, Electrolyte, and Separator Materials, Different Anode and Cathode Materials"** |
| **Day 4** | **31$^{st}$ July, 2025** |
| 10.00 - 11.30 | Dr. Viraj Viswas Patil, Application Engineer, Primaeam Solutions Pvt. Ltd., Chennai. **"Thermal Management Techniques, Battery Pack Casing, and Structural Integration"** |
| 11.30 – 12.30 | Dr. Aruna Kumar Behura, VIT Vellore. **"Thermal management of battery materials and battery life"** |
| 12.30 - 02.00 | Lunch Break |
| 02.00 - 04.30 | Dr. Short, Michael, Teesside University. **"Battery Management Systems: analytics, control, and lifetime optimization"** |
| **Day 5** | **1$^{st}$ August, 2025** |
| 10.00 - 12.30 | Mr. Sandip Mannurkar, Senior Technical Specialist – Manufacturing Solutions, Manufacturing Intelligence division, Hexagon **"Build your own EV Battery Pack with Hexagon"** |
| 12.30 - 02.00 | Lunch Break |
| 02.00 - 03.30 | Dr. Kalaiselvan N, VIT Vellore. **"Battery reuse (second life) and recycling technologies, Safety and environmental regulations"** |
| 03.30 – 04.30 | Dr. Bibhuti Bhusan Sahoo, VIT, Vellore. **"Case studies on EV material applications"** |