

# CURRICULUM VITAE

Dr. V.V.N. Phani Kumar,  
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## **Professional profile:**

- Working as a Scientist on cost-effective lithium-ion battery development for electric vehicle and stationary applications.

## **Academic qualifications:**

- ✓ Ph.D. in Chemistry (2013-2021) from NIT-Warangal, Department of Chemistry.  
**Thesis Title:** Investigation on natural and synthetic polymers as an aqueous binder for anodes of lithium-ion batteries (LIBs).
- ✓ M.Sc (2007-2009) from Andhra University, (First class).
- ✓ B.Sc (2004-2007) from Andhra University, (First class).

## **Professional Summary:**

S.No	Role & Organization	Work focused	Year	Key tasks performed
1.	Scientist (Contract), ARCI.	Development of large format LIB cells (LFP/Graphite) for EV and stationary applications.	2021 to till date	Responsible for slurry mixing, electrode coating, calendaring, and moisture determination of electrodes for prismatic and cylindrical cells. Trained the industry personnel on the LIB process.
2.	Proj. Scientist-B, ARCI.	Development of cylindrical/prismatic cells for LIB applications. (NMC/LFP/Graphite)	2017 to 2021	Slurry mixing, electrode coating, calendaring, and moisture determination of electrodes for cylindrical cells.
3.	Junior/Senior Research Fellow, ARCI.	Studies on aqueous-based electrodes for LIBs.	2013 to 2017	Aqueous binder-based development using LFP, Graphite and LTO materials of LIB.
4.	Project Associate, ARCI.	Synthesis and characterization of LFP material.	2011 to 2013	Synthesis of cathode materials for LIBs and involved in the establishment of the CAEM centre.
5.	Jr. Chemist, ARCH Pharmalabs limited, Sangareddy.	Quality Control	2010 to 2011	Gas Chromatography, Karl-Fischer Titrator, pH, Acid-Base titrations, sampling of materials.

## Experience:

- A battery enthusiast in the lithium-ion battery (LIB) vertical. My core strength is the development of cells in both cylindrical and prismatic formats. Further, my main interests are in slurry mixing and its properties (Rheology), electrode fabrication, calendaring, moisture content determination, and evaluation/optimization/characterization of commercial lithium-ion battery active materials (LFP, NMC532, Graphite, and LTO) respectively.
- Good knowledge on battery testing like Cylindrical, Prismatic, and Coin type for LFP/Graphite/NMC cells.
- Involved in the establishment of LIB dry rooms and pilot plant equipments.
- Provided both theoretical and practical training and demonstrated the LIB process for industry personnel as part of MoU.
- Guided and supervised the students for the completion of M.Tech, B.Tech and M.Sc projects.

## Publications:

- 1) A novel and sustainable tamarind kernel powder based aqueous binder for graphite anode in lithium-ion batteries, **V.V.N. Phanikumar**, K.V. Gobi, B.V. Appa Rao, R. Gopalan and R. Prakash, *ChemistrySelect* **2020**, *5*, 1199–1208, **DOI: 10.1002/slct.201903374**
- 2) Investigation on polyvinyl alcohol and sodium alginate as aqueous binders for lithium titanium oxide anode in lithium-ion batteries, **V.V.N. Phanikumar**, V. R. Rikka, B. K. Das, B.V. Appa Rao, R. Gopalan and R. Prakash *Ionics*, June 2019, Volume 25, Issue 6, pp 2549–2561, **DOI: 10.1007/s11581-018-2751-8**
- 3) Tamarind seed skin derived fiber like carbon nanostructures as novel anode material for lithium-ion battery, S.R. Sahu, D. Parimala Devi, **V.V.N. Phanikumar**, R. Prakash, R. Gopalan and B. K. Das *Ionics*, November 2018, Volume 24, Issue 11, pp 3413–3421; **DOI: 10.1007/s11581-018-2498-2**

## Awards / Honours

- 1) V.V.N. Phani Kumar received the “**Best Poster Award Certificate**” for presenting a poster on “Investigation of micron-sized lithium iron phosphate as cathode using aqueous binder for lithium-ion batteries” at “National conference on Energy Technologies” conducted by “Indian Institute of Technology Madras”, Chennai during 29-30<sup>th</sup> April, 2022.
- 2) V.V.N. Phanikumar, B.V. Appa Rao, K.V. Gobi, R. Gopalan, and R. Prakash, Tamarind kernel powder as a novel aqueous binder for graphite anode in lithium-ion batteries, December 16- 8, 2019, IIT-Roorkee. (**Best Poster Award**)
- 3) Received the '**Best Poster Award**' for the poster presentation on " Effect of polyvinyl alcohol and sodium alginate aqueous binders on lithium titanium oxide anode for lithium-ion batteries" at National conference on frontiers in chemical sciences and technologies (FCST) held at NIT-Warangal, Warangal during 28 -29<sup>th</sup> January, 2016.

## **Conference / Workshop Attended**

- 1) V.V.N. Phani Kumar attended the International Exhibitions & Conferences on 4th Materials Engineering & Technology exhibition and 14th Heat Treatment show at Mumbai during 2-4<sup>th</sup> November, 2022.
- 2) V.V.N. Phani Kumar delivered a talk on “Synthesis of In-Situ Carbon Coated Lithium Iron Phosphate Using Low-Cost Iron Precursors for Lithium-Ion Batteries at IISC, Bengaluru, for an Indo-French Laboratory of Solid-State Chemistry Workshop (LAFICS) during 3-4<sup>th</sup> October, 2022.
- 3) V.V.N. Phani Kumar made a poster on “Investigation of micron-sized lithium iron phosphate as cathode using aqueous binder for lithium-ion batteries” at “National conference on Energy Technologies” conducted by “Indian Institute of Technology Madras”, Chennai during 29-30<sup>th</sup> April, 2022.
- 4) V.V.N.Phanikumar, B.V. Appa Rao, K.V. Gobi, R. Gopalan, and R. Prakash, Tamarind kernel powder as a novel aqueous binder for graphite anode in lithium-ion batteries, December 16- 8, 2019, IIT-Roorkee.
- 5) V.V.N.Phanikumar, B.V. Appa Rao, R.Gopalan and R.Prakash, Polyvinyl alcohol and sodium alginate as alternate green binders of lithium titanium oxide anode for lithium-ion batteries.The 3<sup>rd</sup> National conference on Materials for energy conversion and storage, 8-20<sup>th</sup> October, 2018, IIT-BHU, Varanasi.
- 6) National conference on frontiers in chemical sciences and technologies (FCST) held at NIT-Warangal, 28 -29<sup>th</sup> January 2016, Warangal.
- 7) Oral presentation on Investigation on LiFePO<sub>4</sub>/C cathode prepared by eco-friendly polyvinyl alcohol (PVA) binder for lithium-ion battery at NMD-ATM, 13-16<sup>th</sup> November 2015, Coimbatore.
- 8) One day workshop on “Emerging applications of laser technology in manufacturing” held at VIT University, 13<sup>th</sup> February 2015, Vellore.

## **Contact information**

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