

## *Curriculum vitae*

### **Job Objective:**

To be able to work and grow professionally as a battery researcher in a stable organization where I could demonstrate my expertise in Battery Testing procedures and applications. My endeavour and dedication in the job will be helpful in achieving the company's goals and objectives.

### **Personal details**

Name- Nathiya Kalidas

Date of birth -06.07.1986

Nationality- Indian

Address- Metsurintie 21 D 41, 70150, Kuopio

Tel.: +358 465214791

Email: [nathiya.kalidas@uef.fi](mailto:nathiya.kalidas@uef.fi), [nathikjpd@gmail.com](mailto:nathikjpd@gmail.com)

linkedin: <https://www.linkedin.com/in/nathiya-kalidas-55651144/>

### **Education and degrees awarded**

- Master degree in Materials Science- Anna University, India 2010
- Bachelor degree in Physics -Bharathiar University, India 2008

### **Current position**

- PhD studies: –University of Eastern Finland, Jan. 2017- Present (Final Year)

### **Previous research experience**

- Junior Research Fellow - PSG Institute of advanced studies, India, 2014-2015
  - ❖ Tin-based Composites as High-Capacity Lithium-Alloy Anodes for Li-Ion Batteries
- Project Assistant III-CSIR-Central Electrochemical Research Institute, India, 2013 (9 months)
  - ❖ An explorative attempt to synthesize and to investigate on the suitability of  $\text{LiM}_x\text{PyO}_z$  (M-transition metal) type of pyrophosphates as lithium intercalating electrode material.
- Research Intern-CSIR-Central Electrochemical Research Institute, India, 2010- 2012
  - ❖ An explorative attempt to synthesize and to investigate on the suitability of  $\text{LiM}_x\text{PyO}_z$  (M-transition metal) type of pyrophosphates as lithium intercalating electrode material.

### **Responsibilities**

- Development and synthesis of electrode material for use in lithium-ion batteries.
- Optimization of the synthesis parameters of electrode material; Adaptation of physico and electrochemical characterization methods and operating parameters corresponding to the cell design.
- Worked with sponsors to achieve project goals and deliverables.
- Presented and reported research results and published scientific results in peer-reviewed journals.
- Ensured compliance with environment, safety, health and quality program requirements.

- Maintained strong dedication to the implementation and perpetuation of values and ethics.

### **Research Background**

- Expertise in coin cell type battery making for Lithium ion batteries
- Battery researcher with 7 years of experience in synthesis and characterize the electrode material
- Special trained in synthesis methodology for porous silicon anode and nanostructured phosphate-based cathode material

### **Analytical skills**

#### **Material Characterization**

- X-ray powder diffraction (XRPD)
- Fourier-transform infrared spectroscopy (FT-IR)
- Raman spectroscopy
- $N_2$  sorption techniques
- Particle size analyser
- Scanning electron microscope (SEM)
- Thermogravimetry (TG)

#### **Electrochemical characterization**

- Galvanostatic studies (Cycle life, Rate test)
- Cyclic voltammetry
- Impedance studies characterization of half cells with Biologic, Arbin, and Neware instruments

### **Technical Skills**

- Excellent performance in testing batteries for characterization and validation
- Proficient in MS Office, Origin software
- Skilled in operating battery test instruments
- Knowledgeable in programming, maintenance, repair, and calibration procedures
- Good written and oral communication skills

### **Linguistic skills**

- Tamil – native language
- English – highly proficient
- Finnish- beginners level

### **Workshop and conference**

- Poster presentation at 4<sup>th</sup> Nordic Battery Conference (25-27 Sep.2019) in Danish technical University, Denmark
- Poster presentation at 3rd Nordic Battery Conference (1-3 Nov.2017) in Kokkola, Finland.

- ESCA course workshop at Turku University (16-17<sup>th</sup> Feb.2017) in Turku , Finland
- Paper presented at the 222 nd ECS Meeting (7-12, Oct. 2012) in Honolulu, Hawaii. Abstract number: B4-0668
- Paper presented at 6th Asian Conference on Electrochemical Power Sources (5-8, Jan, 2012) in Chennai, India.

## **Achievements**

### ***Personal grants***

- **2019-** OLVI foundation -10000 euros for the scientific work “Affordable nanoporous silicon anodes for lithium-ion batteries from barley husk ash”
- **2020-** Kuopio University Foundation – 2000 euros for scientific work “High performance hybrid anode for Li-ion batteries to replace graphite”.
- **2021-** Kaute Foundation- 12000 euros for “High performance hybrid anode for Li-ion batteries to replace graphite”
- **2021-** Fortum and Nestle Foundation- 30080 euros for “Biomass derived carbon decorated with silicon as Li-ion battery anode”

## **Research publications**

Google citations-64, h-index-4

- Cascading use of barley husk ash to produce silicon for composite anodes of Li-ion batteries, Material chemistry and Physics, 245, 2020, 122736
- Conjugation with carbon nanotubes improves the performance of mesoporous silicon as Li-ion battery anode, Scientific reports, 10, 2020, 5589
- Role of carbon content in qualifying  $\text{Li}_3\text{V}_2(\text{PO}_4)_3/\text{C}$  as a high capacity anode for high lithium battery applications, RSC Advances, 4 (2014), 17091
- Oxalic dihydrazide assisted novel combustion synthesized pyrophosphate compounds for rechargeable batteries, ECS transactions, 50 (24) (2013) 79
- Combustion synthesized nanocrystalline  $\text{Li}_3\text{V}_2(\text{PO}_4)_3/\text{C}$  cathode for lithium batteries, Materials Research Bulletin 47 (2012) 4300
- $\text{Li}_3\text{M}_x\text{V}_{2-x}(\text{PO}_4)_3/\text{C}$  (M=Fe, Co) composite cathodes with extended solubility limit and improved electrochemical behavior RSC Advances 2 (2012) 6885