Hariprasad Ranganathan

EDUCATION BACKGROUND — Date of completion

Master of Engineering (M.E) in Energy Storage & Conversion — **Feb. 2020**

Jeonbuk National University, Jeonju, Republic of Korea.

Bachelor of Engineering (B.E) in Mechanical Engineering — **Jun. 2016**

Anna University (The Kavery College of Engineering), Chennai, India.

RESEARCH EXPERIENCE

Research Scholar/Assistant — **Sept. 2021 – Apr. 2023**

Institut national de la recherche scientifique (INRS), Varennes, QC, Canada.

- Written and revised scientific manuscripts and drafts for peer-reviewed journal publication.
- Both interdependently and independently carried out chemical experiments such as synthesis and analysis of nanomaterials for energy storage and conversion applications.
- Successfully and safely handled sophisticated scientific instruments such as RRDE, single-cell fuel cell test station, BET, XRD, mechanical hot presser, freeze-dryer, spray coating gun, and other basic laboratory instruments.
- Extracted and interpreted data from various scientific analysis techniques.
- Collaborated with fellow research group members to ensure the safety and cleanliness of the laboratory.
- Completed two doctoral courses in Energy and Materials Science with scores of A and A+.

Graduate Research Assistant — **Feb. 2018 – Feb. 2020**

Department of Energy Storage & Conversion Engineering, Jeonbuk National University, Korea.

- Contributed to research and data analysis within the development and testing of nanomaterials and polymers for energy storage and conversion applications.
- Contributed to professionally written scientific papers for publication.
- Participated in international conferences by undertaking oral and paper presentations.
- Gathered, reviewed, and summarized literature from scientific journals such as SciFinder and PubMed and produced graphs and other scientific calculations using MS Excel.

- Helped senior personnel develop sound research protocols and procedures while collaborating and coordinating with faculty, staff scientists, and fellow graduate students across the departments.
- Conducted thorough literature reviews to better understand research topics and prepare for studies
- Partnered with the research team to strategize research and develop specific plans
- Completed the research degree with a GPA of 4/4.

PROFESSIONAL EXPERIENCE

Warehouse associate **Mar. 2022 - present**

Wiptec Inc., QC, Canada.

- As a part-time warehouse associate, my responsibilities are operating the picker forklift and helping my colleagues pick, pack, and ship the items. Besides, I have also done inventory control and moving of items to the desired locations within the warehouse.

Freelance content writer **Mar. 2018 – Present**

- Wrote and edited high-quality content and visually impactful programs under deadline pressure with an exciting, captivating, and authentic approach for EV-based start-ups such as Zabrizon and Charzer.
- Utilized exceptional writing, editing, and proofreading skills to produce engaging and error-free content for various clients.
- Provided writing support for various projects and departments and created content for websites and online publications.
- Completed thorough research into assigned topics and organized material to research and complete writing tasks.
- Organized material to research and complete writing tasks and completed thorough research into assigned topics.

TECHNICAL SKILLS

- Chemical and thermal synthesis of nanomaterials, and polymers
- Proficient knowledge of various electrochemical energy storage and conversion devices.
- Hands-on experience in mass production, quality control, and material handling.
- Handling of mechanical devices such as Turbines, Boilers, CNCs, components of IC engines, and Fuel Cells.
- Proficient in MS Office package.
- Basic knowledge of AutoCAD, ANSYS, and Solid Edge software.

- Others: Linux (openSUSE, Ubuntu), Mac OS, Windows OS.

RESEARCH SKILLS

- Synthesis and investigation of chemical, physical, electrochemical, and thermal properties of nanomaterials and composite proton exchange membranes for PEMFC applications.
- Mechanochemical, thermochemical, and hydrothermal synthesis techniques.
- Preparation and analysis of the single-cell performance of membrane electrolyte assembly (MEA).
- Assembling and handling of single-cell (Horizon test station), AC impedance spectroscopy (Bekktech four probe cell), thermogravimetric analyzer (TGA), universal testing machine (UTM) and linear sweep voltammetry (LSV) on a potentiostat (Gamry).
- Interpretation and crafting of the following data: XRD, DMA, DSC, TGA, SEM, TEM, XPS, FT-IR, and Raman spectra.
- Research software; Origin, Nanoscale, and ChemDraw.
- Writing and communication of research articles.

TEACHING SKILLS

Can conduct lectures on the following subjects for undergraduate students,

- Basic Electrochemistry, Heat and Mass Transfer, basic Polymer Chemistry, Thermodynamics, Fluid Mechanics, Fuel Cell system, and Engineering.

PERSONNEL SKILLS

- Proficient in English writing (TOEFL iBT writing score 24/30).
- Highly self-motivated and keen on learning new techniques.

AREA OF INTEREST

- Application of Energy Storage/Conversion devices such as IC engines, Fuel Cells, Redox Flow Batteries, Li-Ion batteries, and Solar and Photovoltaic Cells.
- Preparation and investigation of solid polymer electrolyte membranes for Fuel Cells, Redox Flow Batteries, and gas separation technology.

PUBLICATIONS

R Hariprasad, M Vinothkannan, AR Kim, V Subramanian, M-S Oh, DJ Yoo. “Simultaneous improvement of power density and durability of sulfonated poly(ether ether ketone) membrane by embedding CeO2-ATiO2: A comprehensive study in low humidity proton exchange membrane fuel cells.” *Int. J. Energy Res.* **2022,** 1-17. 10.1002/er.7781

M Vinothkannan, **R Hariprasad**, S Ramakrishnan, AR Kim, DJ Yoo. "Potential Bifunctional Filler (CeO_2–ACNTs) for Nafion Matrix toward Extended Electrochemical Power Density and Durability in Proton-Exchange Membrane Fuel Cells Operating at Reduced Relative Humidity." *ACS Sustainable Chem. Eng.* **2019**, 7, 15, 12847-12857. 10.1021/acssuschemeng.9b01757.

R Hariprasad, M Vinothkannan, AR Kim, DJ Yoo. "SPVdF-HFP/SGO nanohybrid proton exchange membrane for the applications of direct methanol fuel cells." *Journal of Dispersion Science and Technology*, **2019**, 1-13. 10.1080/01932691.2019.1660672.

Luo, Y., Wang, P., Wu, S. **Ranganathan, H.,** et al. "Simultaneous heterostructure engineering and Mn doping modulation of Ni2P nanosheet arrays for enhanced electrocatalytic water splitting." Sci. China Mater. 65, 1814–1824, **2022**. https://doi.org/10.1007/s40843-021-1953-5.

Luo, Y., Wang, P., Wu, S. **Ranganathan, H**., et al. "Simultaneous heterostructure engineering and Mn doping modulation of Ni2P nanosheet arrays for enhanced electrocatalytic water splitting." Sci. China Mater. 65, 1814–1824 **2022**. https://doi.org/10.1007/s40843-021-1953-5.

Mingjie Wu, Gaixia Zhang, **Hariprasad Ranganathan**, Shuhui Sun. Zn-Air Battery Application of Atomically Dispersed Metallic Materials. https://doi.org/10.1201/9781003153436.

CONFERENCE PRESENTATIONS

POSTER PRESENTATIONS

- **R Hariprasad,** DJ Yoo. "Sulfonated Poly(vinylidene fluoride-co-hexafluoropropylene)/Sulfonated Graphene Oxide (SGO) composite membrane for Direct Methanol Fuel Cell (DMFC)". The annual conference, The Korean Society for Energy research at Yeosu expo convention Centre, Republic of Korea.
- **R Hariprasad,** DJ Yoo. "Sulfonated Poly(vinylidene fluoride-co-hexafluoropropylene)/ Sulfonated Graphene Oxide (SGO) composite membrane for Direct Methanol Fuel Cell (DMFC)". Korean Hydrogen and Renewable Energy conference at Pyeongchang Alpesia Convention Center.
- **R Hariprasad**, M Vinothkannan, DJ Yoo. "SPEEK Membrane Incorporated with Sustainable Bifunctional Filler (CeO_2-$ATiO_2$) for PEMFC Applications". Autumn conference, The Korean Society for Energy research at Haeundae Grand Hotel, Busan, Republic of Korea.

AWARDS & CERTIFICATES

- MATECSS Excellence Ph.D. Scholarship for 4 years. (2021-2025)
- British Council English score; CEFR level C1 in the test of English proficiency (Verification ID: L8q9pb9Luk).

- TOEFL iBT score report; 87/120 (Appointment Number: 5237 5121 9150 6834).
- Certificate of merit; 1st prize in the event "quiz" at the 10th National level technical symposium, Muthayammal Engineering College, Rasipuram.
- Certificate of merit; 3rd prize in the "water rocketry" event at a National level technical symposium, Sri Shanmugam College of Engineering and Technology, Salem.
- Certificate of participation; technical workshop on "opportunities in core industries" at the 10th National level technical symposium, Muthayammal Engineering College, Rasipuram.
- Certificate of participation; technical workshop on "lean manufacturing" at the Narasu's Sarathy Institute of Technology, Poosaripatty.
- Certificate of participation; in the event "aquamissile" at a national-level technical symposium, Mahendra Institute of Technology, Namakkal.
- Diploma certificate; completion of course entitled "Diploma in Computer Applications (DCA)" at the CCI Computer Education, Omalur.

LANGUAGES

English: Proficient (TOEFL iBT: 87/120)

PERSONAL INFORMATION

Residing address: 301-475 Rue Saint-Charles O, Longueuil, QC J4H 3X1.

Email ID: harihdr3@gmail.com

Mobile no.: +14383089227, +919042233454 (WhatsApp)

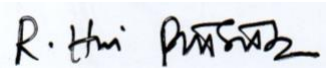
LinkedIn: https://www.linkedin.com/in/hariprasad-ranganathan-b3a3a3ab/

Google Scholar: https://scholar.google.com/citations?user=CkPfeboAAAAJ&hl=en

Research gate: https://www.researchgate.net/profile/Hariprasad_Ranganathan

D.O.B: May 17th, 1995

Nationality: Indian



(Hariprasad Ranganathan)