

Navin Kumar, Ph.D.

LinkedIn: <https://www.linkedin.com/in/navinsubram>

Work: <https://www.ornl.gov/staff-profile/navin-kumar>

Email: navin.subram@gmail.com

Nationality: Singapore

Immigration Status: U.S. Permanent Residency (Green Card)

Summary

Innovative energy researcher and engineer with a proven track record in advancing thermal energy technologies. Expertise spans thermal energy storage, heat pump technologies, and energy-efficient appliances. Skilled in translating research into real-world applications through collaboration with multidisciplinary teams, including universities, national laboratories, and industry stakeholders. Prolific author and active participant in professional organizations such as ASHRAE and ACEEE.

Education

Texas A&M University — College Station, TX

Ph.D. in Mechanical Engineering

Concentration: Heat Transfer, Fluid Mechanics, Thermodynamics

CGPA: 3.846/4.0

2014 – 2018

Embry-Riddle Aeronautical University — Daytona Beach, FL

Bachelor of Science in Aerospace Engineering (Magna cum Laude)

Concentration: Aerodynamics and Propulsion

CGPA: 3.82/4.0

2010 – 2013

Professional Experience

Research and Development

Oak Ridge National Laboratory — Oak Ridge, TN

Building Technologies Research and Integration Center

June 2024 – Current

- Lead high-impact projects on thermal energy systems, such as Thermoelectric Heat Pumps, Next-Generation Dishwashers, Modular Heat Pumps, Thermal Energy Storage Integrated Heat Pumps, and Dual-Fuel Heat Pump Systems.
- Engage in industry committees, including ASHRAE (Co-Chair for SPC 233) and the Department of Energy's Stor4Build initiative, focusing on standards development and energy storage optimization.

Principal Engineer

GTI Energy — Des Plaines, IL
Residential Building Efficiency Group
March 2021 – May 2024

- Led R&D projects on advanced thermal technologies, including Gas Absorption Heat Pumps, Air-to-Water Heat Pumps, CO₂ Heat Pumps, and Dual-Fuel Heat Pumps.
- Collaborated with NGOs, OEMs, DoD, DoE, national laboratories, and utility companies to bridge innovative research with practical applications.

Postdoctoral Researcher

Oak Ridge National Laboratory — Oak Ridge, TN
Building Technologies Research, Multifunctional Equipment Integration Group
Feb 2019 – March 2021

- Advanced building energy research with a focus on Thermal Energy Storage, HVAC Systems, and Energy-Efficient Appliances.
- Developed proposals and drove the future of energy solutions through innovative technology development.

Research and Product Development Engineer

Viking Cold Solutions — Houston, TX
April 2018 – Feb 2019

- Advanced low-temperature phase change materials through development, prototyping, and empirical modeling.
- Conducted component-level evaluations and enhanced the effectiveness of passive thermal energy storage systems.

Graduate Researcher

Multi-Phase Flow and Heat Transfer Laboratory, Texas A&M University — College Station, TX
June 2014 - Dec 2018

- Conducted experiments on phase change materials (PCMs) and their integration into latent heat thermal energy storage systems.
- Developed techniques to address sub-cooling and phase segregation in PCMs, contributing to advancements in dry cooling applications.

Undergraduate Research Assistant

Department of Aerospace Engineering, Embry-Riddle Aeronautical University — Daytona Beach, FL
Spring 2012 – 2013

Invited Presentations

- “Challenges with Current Characterization Techniques,” U.S Department of Energy’s Thermal Building Workshop, Lawrence Berkeley Lab, Nov 2019.
- “Economic Value of HVAC-Mediated Thermal Storage under TOU Tariffs,” IEA HPT Annex 55 Experts Meeting, June 2020.
- “Novel Materials in Thermal Energy Storage for Buildings,” U.S Department of Energy Webinar, Aug 2020. [Link](#)

Publication and Patents

Journal and Conference Publications:

- [Citations: ~500, Impact Factor: 12] [Detailed Publication List](#)

Patents:

- Li, Y., Kumar, N., LaClair, T., Goswami, M., Rios, O., Gluesenkamp, K. (2021). Stable Salt Hydrate-Based Thermal Energy Storage Materials. U.S. Provisional Patent filed 04/15/2021. Patent Number: US20210340423A1.

Review Contributions:

- Technical reviewer for ASME Heat Transfer Journal, Energies, Materials, Journal of Cleaner Production, Chemical Engineering Journal, Journal of Energy Storage.
- Department of Energy ARPA-E Open 2021 Proposal Reviewer.

Funding

- **Reduced Cost Heat Pump Space and Water Heating in Cold Climates**
Department of Energy FOA DE-LC-000L095, 2022
Principal Investigator: Lawrence Berkeley National Laboratory
Co-PI: Navin Kumar, GTI Energy
Funding Award: \$450,000
- **Gas-Fired Adsorption Water Heater Development (HeatAmp)**
Utilization Technology Development NFP & Northwest Energy Efficiency Alliance, 2022
Principal Investigator: Navin Kumar, GTI Energy
Funding Award: \$175,000
- **Demonstration of Thermal Heat Pumps for Naval Facilities**
Department of Defense, Navy, 2022
Principal Investigator: Navin Kumar, GTI Energy
Funding Award: \$597,000
- **Low-GWP CO2 Heat Pumps for Army Facilities**
Department of Defense, Defense Innovation Unit (DIU), 2023
Principal Investigator: Navin Kumar, GTI Energy
PI: Navin Kumar
Funding Award: \$960,000
- **Evaluation of Cold-Climate Air-to-Water Heat Pump**
Daikin Comfort, North America, 2023
Principal Investigator: Navin Kumar, GTI Energy
Funding Award: \$275,000

Skills

- Research and development in building energy efficiency
- Expertise in HVAC systems, heat pumps, thermal energy storage, and refrigeration
- Proficient in technical presentation, strategic growth, and grant writing
- Strong project management and leadership capabilities
- Advanced modeling and innovation in energy technologies

Affiliations

- Sigma Gamma Tau Honors Society
- Tau Beta Pi Engineering Honors Society
- American Society of Mechanical Engineers (ASME), 2014–Current
- American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE), 2019–Current
 - ASHRAE SPC 233 – Thermal Energy Storage Standard Co-Chair