Stanford

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Bio

BIO

Sathya Narayanan Jagadeesan is a postdoctoral scholar at the SLAC-Stanford Battery Center, with joint appointments in the Applied Energy Division at SLAC National Accelerator Laboratory and the Department of Materials Science and Engineering at Stanford University. He earned his Ph.D. in Chemical Engineering from Worcester Polytechnic Institute. His research focuses on earth-abundant and non-critical battery chemistries, including aqueous iron, sodium-sulfur, and sodium-ion systems, using advanced synchrotron X-ray characterization and data-driven approaches to understand interfacial chemistry and degradation mechanisms. His work aims to advance scalable and resilient energy storage technologies that reduce reliance on critical materials and strengthen the reliability of modern electric grids. He is driven by translating fundamental insights into practical solutions that support long-duration and widely deployable energy storage.

PROFESSIONAL EDUCATION

- Ph.D., Worcester Polytechnic Institute , Chemical Engineering (2024)
- M.Engg., University of New Hampshire , Chemical Engineering (2023)
- B.Tech., CSIR - Central Electrochemical Research Institute , Chemical and Electrochemical Engineering (2019)

STANFORD ADVISORS

- Yi Cui, Postdoctoral Faculty Sponsor
- Xueli Zheng, Postdoctoral Research Mentor

PATENTS

- Xiaowei Teng, Divakar Arumugam, Sathya Narayanan Jagadeesan, Tongxin Zhou. "United States Patent PCT/ US2025/ 024067 Electrochemical Iron Production"
- Xiaowei Teng, Sathya Narayanan Jagadeesan. "United States Patent 18/441,249 Iron Anode Battery", Aug 15, 2024

LINKS

- LinkedIn: https://www.linkedin.com/in/sathya-narayanan-jagadeesan
- Google Scholar: https://scholar.google.co.in/citations?user=HMBmLqMAAAAJ&hl=en
- Personal Site: https://sites.google.com/view/sathya-jagadeesan

Publications

PUBLICATIONS

- **Machine Learning-Guided Design of Electrolytes for Rechargeable Batteries** *ADVANCED MATERIALS TECHNOLOGIES*
  Jagadeesan, S., Kalvakaalva, M., Liu, J., Nanda, J., Zheng, X.

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- **Elucidating Sodium-Sulfur Battery Chemistry using Operando Transmission X-ray Microscopy and X-ray Absorption Spectroscopy** *JOURNAL OF THE ELECTROCHEMICAL SOCIETY*
  Jagadeesan, S., Hao, H., Sinha, A., Xue, Z., Nanda, J., Zheng, X.
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- **Enhanced Reversibility of Iron Metal Anode with a Solid Electrolyte Interphase in Concentrated Chloride Electrolytes.** *Advanced materials (Deerfield Beach, Fla.)*
  Jung, M. S., Yang, S., Chen, C., Jagadeesan, S. N., Chen, W., Feng, G., Sui, Y., Jiang, Z., Musa, E. N., Chiu, N. C., Maclennan, H., Holden, E., Stylianou, et al
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- **Electrochemical Reduction Pathways from Goethite to Green Iron in Alkaline Solution with Silicate Additive** *ACS SUSTAINABLE CHEMISTRY & ENGINEERING*
  Arumugam, D., Zhou, T., Jagadeesan, S., Pidathala, R., Zhang, L., Abeykoon, A., Kwon, G., Olds, D., Narayanan, B., Teng, X.
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- **Unlocking High Capacity and Reversible Alkaline Iron Redox Using Silicate-Sodium Hydroxide Hybrid Electrolytes.** *ChemSusChem*
  Jagadeesan, S. N., Guo, F., Pidathala, R. T., Abeykoon, A. M., Kwon, G., Olds, D., Narayanan, B., Teng, X.
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- **Enhanced Urea Oxidation Electrocatalytic Activity by Synergistic Cobalt and Nickel Mixed Oxides.** *The journal of physical chemistry letters*
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- **Chloride Insertion Enhances the Electrochemical Oxidation of Iron Hydroxide Double-Layer Hydroxide into Oxyhydroxide in Alkaline Iron Batteries** *CHEMISTRY OF MATERIALS*
  Jagadeesan, S., Barbosa, G. D., Guo, F., Zhang, L., Abeykoon, A., Kwon, G., Olds, D., Turner, C., Teng, X.
  2023; 35 (16): 6517-6526

- **Revitalizing Iron Redox by Anion-Insertion-Assisted Ferro- and Ferri-Hydroxides Conversion at Low Alkalinity.** *Journal of the American Chemical Society*
  Guo, F., Jagadeesan, S. N., Pidathala, R. T., Kim, S., Shan, X., Deskins, N. A., Abeykoon, A. M., Kwon, G., Olds, D., Narayanan, B., Teng, X.
  2022; 144 (27): 11938-11942

- **Advanced Cu3Sn and Selenized Cu3Sn@Cu Foam as Electrocatalysts for Water Oxidation under Alkaline and Near-Neutral Conditions.** *Inorganic chemistry*
  Karthick, K., Anantharaj, S., Patchaiammal, S., Jagadeesan, S. N., Kumar, P., Ede, S. R., Pattanayak, D. K., Kundu, S.
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- **Evaluating DNA Derived and Hydrothermally Aided Cobalt Selenide Catalysts for Electrocatalytic Water Oxidation.** *Inorganic chemistry*
  Karthick, K., Jagadeesan, S. N., Kumar, P., Patchaiammal, S., Kundu, S.
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