Stanford

Sanzeeda Baig Shuchi

Ph.D. Student in Chemical Engineering, admitted Summer 2021

Bio

BIO

Sanzeeda Baig Shuchi envisions a world where energy crisis is a thing of the past. She is a Ph.D. candidate in Chemical Engineering (ChemE) at Stanford University. Her current energy research focuses on improving and understanding lithium battery stability using surface science and interface engineering supervised by Prof. Stacey F. Bent and Prof. Yi Cui. She is a TomKat Center Graduate Fellow for Translational Research and a Link Foundation Energy Fellow. She completed her MS in ChemE from Stanford. She also received the Summer First Fellowship and ChemE departmental fellowship. Before Stanford, she completed her BS in the same field from Bangladesh University of Engineering and Technology (BUET), where she graduated with the highest CGPA in the Faculty of Engineering and is a prime minister gold medal candidate. Other than research, she serves as the lab safety officer in Bent group and enjoys performing departmental student mentoring and student representative activities. She has also previously served as a co-organizer of Engineering Students for DEI (ES4DEI) at Stanford and the vice-president of Environment Watch: BUET. Outside the lab, she enjoys houseplants, interior decoration, painting, board games, and exploring local beaches and restaurants.

EDUCATION AND CERTIFICATIONS

- Master of Science, Stanford University , Chemical Engineering (2023)
- Bachelor of Science, Bangladesh University of Engineering and Technology (BUET) , Chemical Engineering (2021)

Publications

PUBLICATIONS

- **Cryogenic X-ray photoelectron spectroscopy for battery interfaces.** *Nature*
  Shuchi, S. B., D'Acunto, G., Sayavong, P., Oyakhire, S. T., Sanroman Gutierrez, K. M., Risner-Jamtgaard, J., Choi, I. R., Cui, Y., Bent, S. F.
  2025; 646 (8086): 850-855
- **Elucidating the Effects of LiF on Lithium Metal Anodes.** *Nano letters*
  Kim, M. S., Wang, J., Zhang, W., Sayavong, P., Zhang, Z., Oyakhire, S. T., Shuchi, S. B., Kim, S. C., Cui, Y., Chen, Y., Yu, Z., Gong, H., Xu, et al
  2025
- **Reactive Suspension Electrolytes for Lithium Metal Batteries** *ACS ENERGY LETTERS*
  Lee, J., Kim, M., Cui, Y., Zhang, W., Shuchi, S., Holmes, S. E., Lee, J., Serrao, C., Kim, S., Holoubek, J., Sayavong, P., Cai, A., Choi, et al
  2025
- **Revealing and Quantifying Carbon Corrosion in Aqueous Manganese-Based Batteries.** *Nano letters*
  Ravi, A., Zhang, G., Holoubek, J., Li, Y., Hao, H., Cai, A., Shuchi, S. B., Feng, G., Han, J., Li, J., Bent, S. F., Zheng, X., Cui, et al
  2025
- **Galvanic corrosion underlies coulombic efficiency differences in high-performing lithium metal battery electrolytes** *ENERGY & ENVIRONMENTAL SCIENCE*

Oyakhire, S. T., Kim, S., Zhang, W., Shuchi, S., Cui, Y., Bent, S. F.
2025

- **Enhanced ALD Nucleation on Polymeric Separator for Improved Li-S Batteries.** *ACS applied materials & interfaces*
  D'Acunto, G., Shuchi, S. B., Zheng, X., Than, L. V., Geierstanger, E. M., Harake, M., Cui, A., Werbrouck, A., Mattinen, M., Cui, Y., Bent, S. F.
  2025

- **Continuous lithium extraction from brine by efficient redox-couple electrodialysis** *MATTER*
  Xu, R., Xiao, X., Zhang, G., Ye, Y., Zhang, P., Yang, Y., Shuchi, S., Cui, Y.
  2024; 7 (11)

- **Spontaneous lithium extraction and enrichment from brine with net energy output driven by counter-ion gradients** *NATURE WATER*
  Zhang, G., Li, Y., Guan, X., Hu, G., Su, H., Xu, X., Feng, G., Shuchi, S., Kim, S., Zhou, J., Xu, R., Xiao, X., Wu, et al
  2024; 2 (11): 1091-1101

- **Deconvoluting Effects of Lithium Morphology and SEI Stability at Moderate Current Density Using Interface Engineering** *ADVANCED MATERIALS INTERFACES*
  Shuchi, S., Oyakhire, S. T., Zhang, W., Sayavong, P., Ye, Y., Chen, Y., Yu, Z., Cui, Y., Bent, S. F.
  2024

- **Recovery of isolated lithium through discharged state calendar ageing.** *Nature*
  Zhang, W., Sayavong, P., Xiao, X., Oyakhire, S. T., Shuchi, S. B., Vilá, R. A., Boyle, D. T., Kim, S. C., Kim, M. S., Holmes, S. E., Ye, Y., Li, D., Bent, et al
  2024; 626 (7998): 306-312

- **Proximity Matters: Interfacial Solvation Dictates Solid Electrolyte Interphase Composition.** *Nano letters*
  Oyakhire, S. T., Liao, S., Shuchi, S. B., Kim, M. S., Kim, S. C., Yu, Z., Vila, R. A., Rudnicki, P. E., Cui, Y., Bent, S. F.
  2023