



SJSU SAN JOSÉ STATE
UNIVERSITY

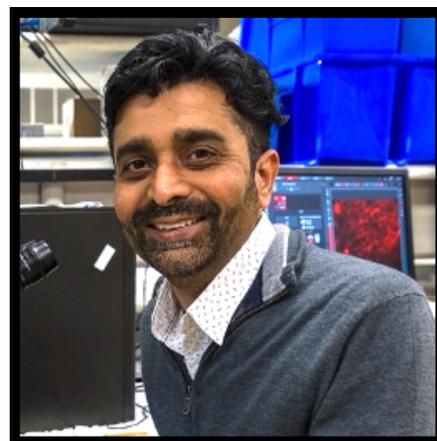
CHEMICAL & MATERIALS ENGINEERING

2023 ANNUAL NEWSLETTER

Message from the Chair ✦

After several years, we are reviving the Chemical and Materials Engineering department newsletter to stay connected with the friends of the department. As you will see in the various sections on students, faculty, and alumni, one constant thing is change – and there have been many changes in the past few years. Although, there have been snippets and updates regularly posted on LinkedIn, Facebook, the department website and such, the newsletter narrates a story. We hope you will find it interesting and enjoy flipping through. We encourage you to make a special note of the upcoming events. Thank you.

– Anand Ramasubramanian



DID YOU KNOW?

·The CME department was started in 1953 as Food Processing Engineering program.

VISIT OUR WEBSITE
SJSU.EDU/CME

Welcome, Chris! ✦



Christopher Lew, Ph.D., joined the CME department as Assistant Professor of Chemical Engineering in Fall 2023. Chris received his BS in Chemical Engineering from Stanford University, and a PhD, also in Chemical Engineering from the University of California at Riverside. After a postdoctoral stint at the University of Minnesota, Chris worked for eleven years at Chevron Technical Center in Richmond, CA. His research interests are on catalysis and zeolites. His very first semester here, Chris took up the daunting task of teaching the most important course of the CHE program, i.e., Plant Design! Chris is a native of the SF Bay Area and lives in Alameda with his wife, two children, and dog.

Thank You, Melanie and Claire! ✦

After many long years of service to the department, Melanie and Claire entered the Faculty Early Retirement Program (FERP) in 2021. Dr. Melanie McNeil was the second woman faculty to join the department in 1990 as an Assistant professor, after receiving a PhD on heterogeneous catalysis from UC Santa Barbara. She taught undergraduate and graduate kinetics classes CHE 158 and CHE 218 for more than two decades, and also developed handful of courses ranging from ethics, safety, statistics, and bioprocess engineering. She also had a long-standing research collaboration with IBM and NASA. She continues to serve as graduate and undergraduate coordinator, and remains the go-to person to navigate the SJSU policy maze. A California native, she now lives in near the Blue Ridge mountains with her husband, two dogs, and two horses.



Dr. Claire Komives joined the department in 1999 as an Assistant professor, after a three-year stint at Du Pont. She received her Ph.D. from U Pittsburgh and did postdoctoral training at ETH Zurich. She built the Biochemical Engineering program at SJSU, with funding from the NSF and support from local industries. In the past two decades, numerous graduate and undergraduate students have benefitted from the Dr Komives' biotechnology research program, which has spanned work with various microorganisms to snake antivenom molecules. She has held leadership positions in the BIOT division of ACS and currently serves as an ABET Commissioner. She has also had an interest in pedagogy and engineering education, and as a Fulbright scholar, she traveled extensively across India giving workshops on best education practices. Currently, she is pursuing a part-time MBA at SJSU and continues to teach junior core courses.



CME BY THE NUMBERS

BS (ChE): 127
BS (MATE): 81
MS (ChE): 47
MS (MATE): 33
T/TT faculty: 10
PT faculty: 18

DID YOU KNOW?

The Chemical & Metallurgical Engineering department was established in 1958.

Thank You To You, Too, Dave! ✦



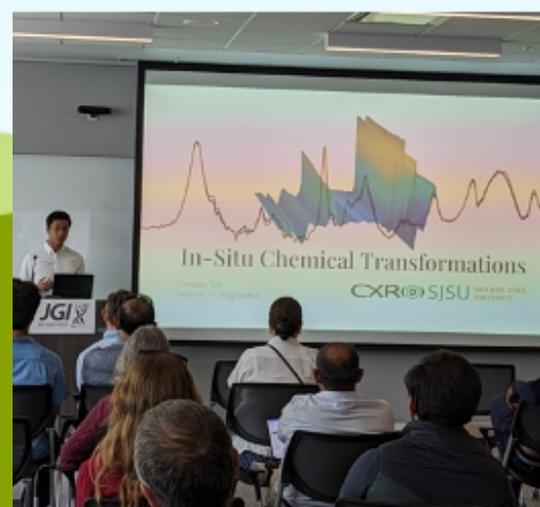
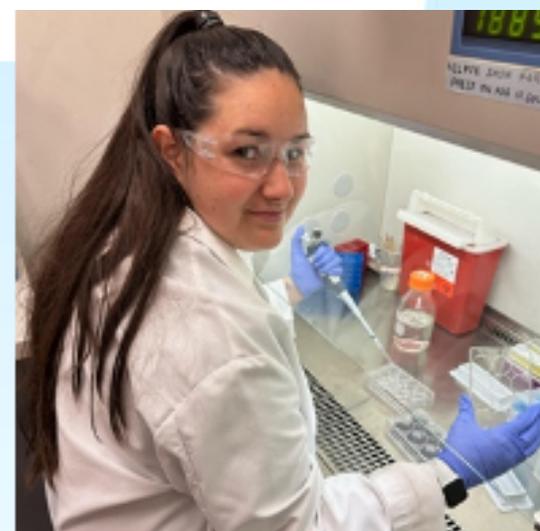
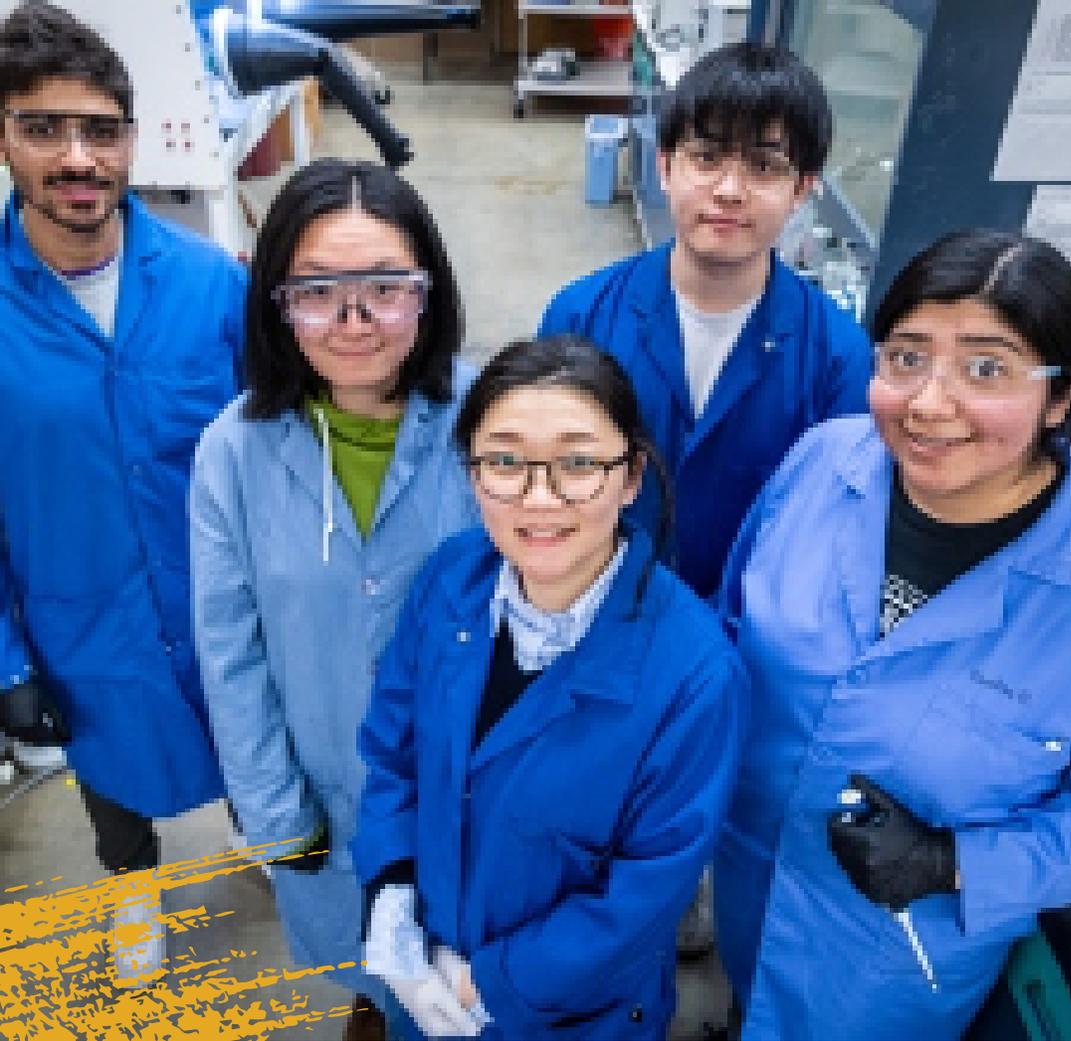
Dr. David Wagner moved to the University of Utah in early 2023. Since joining SJSU in 2017, Dave taught capstone senior project class, and many BS/MS students worked with him on projects focused on sustainable energy. He was a great colleague. It was a bitter-sweet farewell for both the department and Dave, as he wanted to move closer to family (Dave is a native of Salt Lake City, and received all his degrees from the University of Utah).

FACULTY AWARDS AND HONORS

- ✦ Dr. Oh received the SJSU's 2022 Early Career Investigator Award for her excellence in research, scholarship and creative activity during the probationary period. She works on next-gen batteries including solid-state and aqueous electrolyte-based batteries. Dr. Oh's research was featured in SJSU's Washington Square Magazine.
- ✦ Our faculty received several of SJSU College of Engineering awards: Dr. Kao received 2023 Newnan award for Faculty Excellence, Dr. Keles received the 2023 Faculty Excellence for Research award, and Dr. Ramasubramanian received the 2022 Faculty Excellence for Research award. Dr. Michael Oye, lecturer in Materials Engineering, received the 2022 Faculty Excellence for Teaching award.
- ✦ Dr. Kao was elected Treasurer (2023-2026) of the Society for Industrial Microbiology, an international professional society committed to industrial biotechnology.
- ✦ Dr. KC was selected as 2023 Summer Faculty Fellow by the US Department of Defense to work on weaponry shield simulations.

STUDENT SPOTLIGHTS

- ✦ Barbara Vecci, and Shengpeng Zhuo received the CSUPERB Faculty-Student Collaboration grant in 2022 and 2023, respectively.
- ✦ Myra Awan and Maya Papez. Best poster award. 2023 Bay Area Regenerative Medicine Symposium, Stanford University.
- ✦ Timothy Tan, 2nd place, 2023 Poster Slam, Advancing STEM Pioneers in Research in Energy Sciences program, LBNL.



RECENT GRANTS AND CONTRACTS

- + Keles, O. (PI) NSF CAREER: Multi-scale mechanical behavior of quantum dot nanocomposites: Towards data-driven automatic discovery of high-performance structures, \$600,000
- + Keles, O. (co-PI) NEA. Exploring and Supporting San José's Cultural Heritage and Sustainable Art through 3D Printing Technology. \$20,000
- + Kao, K. (PI) NIH. Adaptive Evolution of Candida Biofilms. \$577,540
- + Kao, K. (PI) NSF. Deciphering Complex Phenotypes in Bacteria Aided by Continuous Genome Shuffling and High Throughput Analytical Technologies. \$328,714
- + Oh, D. (PI), Keles, O. (co-PI). NSF MRI: Acquisition of a Tip-Enhanced Raman Spectroscope for Research and Education. \$550,000
- + Oh, D. (co-PI) DOE. EFRC: Center for High Precision Patterning Science (CHiPPS). \$468,000.
- + Oh, D. (co-PI), Lee S.-J. (co-PI), NSF. Effect of Cyclic Mechanical Stress on Ionic Conduction in Composite Polymer Electrolytes for Solid-State Batteries, \$330,187
- + Oye, M. (PI). Guadalupe River Park Conservancy, Community Planning: Guadalupe River Park Conservancy. \$15,000
- + Ramasubramanian, A.K. (PI), Lee S.-J. (co-PI), NASA. Thrombosis in Microgravity. \$150,000
- + Ramasubramanian, A.K. (PI). Open Medicine Foundation. Erythrocyte Biomechanics in ME/CFS. \$40,000.

CME IN THE COMMUNITY

- + Liat Rosenfeld leads an NSF-funded Research Experience for Teachers summer program for the Bay Area high school teachers, aimed at collaboration for new pedagogical project ideas.
- + Students of MATE 25 class run workshops at East Side high schools introducing to the exciting world of materials.
- + Students from MATE 131 class presented an exhibit of 3D-printed designs at ICA, San Jose.



RECENT PUBLICATIONS

- + M.F.S. Bangi, K. Kao, J.S.-I. Kwon*. Physics-informed neural networks for hybrid modeling of lab-scale batch fermentation for β -carotene production using *Saccharomyces cerevisiae*. *Chemical Engineering Research and Design*. 2022.
- + S. KC, and R. Abolfath. "Towards the Ionizing Radiation Induced Bond Dissociation Mechanism in Oxygen, Water, Guanine and DNA Fragmentation: A Density Functional Theory Simulation." *Scientific Reports*, 12, 19853 (2022).
- + S. B. Sharma, I. Qattan, S. KC and S. Abedrabbo "First-Principles Prediction of New 2D p-SiPN: A Wide Bandgap Semiconductor" *Nanomaterials* 12(22), 4068 (2022).
- + S. B. Sharma, I.A. Qattan, S. KC, A.M. Alsaad, "Large Negative Poisson's Ratio and Anisotropic Mechanics in New Penta-PBN Monolayer", *ACS Omega*, (2022).
- + G Benson et al., "Giant Effects of Interlayer Interaction on Valence-Band Splitting in Transition Metal Dichalcogenides", *J. Phys. Chem. C*, (2022.)
- + S B Sharma, Santosh KC, D Paudyal, "Enhanced optoelectronic and elastic responses in fluorinated penta-BCN." *Appl. Surf. Sci.* 153239 (2022).
- + R. Paudel, S. KC, S Adhikari, JC Zhu, S Ahmad, GC Kaphle, D. Paudyal, "Electronic and magnetic properties of iridium-based novel Heusler alloys", *J. Magn. Mater.* 555, 169405 (2022).
- + J. Dei Rossi, O. Keles, and V. Viswanathan, "Fused Deposition Modeling with Induced Vibrations: A Study on the Mechanical Characteristics of Printed Parts," *Applied Sciences*, 12 (2022) 9327.
- + S. Srinivasan and O. Keles, "Effect of raster angle on mechanical properties of 3D printed short carbon fiber reinforced acrylonitrile butadiene styrene," *Composites Communications*, 32 (2022) 101163.
- + Schmalz, J., Quinarez, R. V., Kothare, M. V., & Kumar, G. (2023). Controlling neocortical epileptic seizures using forced temporal spike-time stimulation: an in silico computational study. *Frontiers in Computational Neuroscience*, 17.
- + Branen, A., Yao, Y., Kothare, M. V., Mahmoudi, B., & Kumar, G. (2022). Data driven control of vagus nerve stimulation for the cardiovascular system: An in silico computational study. *Frontiers in Physiology*, 13, 798157.
- + Kathiravelu, P., Arnold, M., Fleischer, J., Yao, Y., Awasthi, S., Goel, A. K., ... & Mahmoudi, B. (2022). CONTROL-CORE: a framework for simulation and design of closed-loop peripheral neuromodulation control systems. *IEEE Access*, 10, 36268-36285.
- + Kaur, M., A. Ferreira, C.Y. Hung, G. Dantas, A.K. Ramasubramanian (2022), "A low-cost, high-throughput microfluidic nano-culture platform for functional metagenomics", *Biotechnology Progress*, 13: e3317.
- + Sanchez, Z.A., V. Vignasha, D. Virasammy, L. Rosenfeld, A.K. Ramasubramanian (2022), "The interaction of vortical flows with red cells in venous valve mimics", *Biomicrofluidics*, 16: 024103.
- + Bose, B., T. Downey, A.K. Ramasubramanian, D.C. Anastasiu (2022), "Identification of distinct characteristics of antibiofilm peptides and prospection of diverse sources for efficacious sequences", *Frontiers in Microbiology*, 12: 783284.
- + Ho, E., J. Mulorz, J. Wong, M.U. Wagenhäuser, P.S. Tsao, A.K. Ramasubramanian, S.-J.J. Lee (2022), "Nicotine affects murine aortic stiffness and fatigue response during supraphysiological cycling", *J. Biomech. Eng.* 144(1): 011005.
- + Reddoch-Cardenas, K.M., H.F. Pidcoke, A.K. Ramasubramanian, M.A. Meledeo, A.P. Cap., (2023), "Hyperbaric treatment of platelets is comparable to cold storage alone over 14 days", *Transfus.* 63: S120-S125.

2023 GRADUATE RESEARCH AND SENIOR PROJECTS

Graduate and undergraduate students presented their culminating project experience on May 13, 2023 to several experts from industry and from academia. A number of students were recognized for their accomplishments, and Andrew LaTour (CHE '11) was recognized with the Outstanding Alumni award.



UPCOMING EVENTS

February 21, 2024, 6–8:30 p.m.

Industry Advisory Council meeting

March 21, 2024, 6–9 p.m.

2024 Alumni Reunion Event

SJSU ENG. 285/7

May 13, 2024, 10 a.m.–2 p.m.

2024 Graduate Research and Senior Projects (GRaSP)

ACTIVE STUDENT CHAPTERS AND CONTACTS

- + American Institute of Chemical Engineers (AIChE): Patrick Lee Padua
- + Material Advantage (MA): Justin Chua
- + International Society for Pharmaceutical Engineers (ISPE): Anisa Khan
- + Surface Mount Technology Association (SMTA): Sameer Nadik

2023 ALUMNI REUNION SOCIAL



More than 25 alumni (from the Class of 1984 to the Class of 2021) enjoyed an evening meeting with each other and with faculty and current students on campus. The establishment of Chemical and Materials Engineering Alumni Association Board (CMEAAB) was announced, one of the main goals of which is to facilitate interactions between current students and department alumni.

ALUMNI DONATIONS SUPPORT CME STUDENTS

- + A light microscope for Materials Engineering lab was purchased through a kind donation from Robert Ching ('77 BS ChE)
- + Endowment established by X Zee ('75 MS MatE) will be used for the student scholarships
- + Recurring donations from Stacey Baba ('81 MS MatE) and Jim Vokac foundation, Bill Mazotti ('84 BS ChE) support annual student scholarships