

Exponent®
Engineering & Scientific Consulting

Srivaths Kalyan, Ph.D.

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Professional Profile

Dr. Kalyan specializes in biomedical device fabrication, calibration, and real-time operational analysis. He has extensive experience working with integrated microfluidic devices for cell manipulation. He has led and worked on projects researching and designing devices for cell separation and integrated electroporation, optical phantom development, sample preparation and nucleic acid-based pathogen identification, and time-lapsed cell imaging. He has also worked extensively on developing device fabrication pipelines using hot embossing, electroplating, photolithography, 3-D printing, laser cutting, and PCB design.

Prior to joining Exponent, Dr. Kalyan earned his Ph.D. from Johns Hopkins University in the Mechanical Engineering Department. During his doctoral work, he investigated inertial microfluidic Vortex trapping and integrated electroporation to purify and electroporate cells, with potential therapeutic applications in lymphocyte engineering. He systematically varied design parameters and wrote MATLAB image analysis code to evaluate design changes. He also redesigned electrodes with the aid of COMSOL simulations to address the key problem of electrolysis.

Dr. Kalyan has served as a teaching assistant for the graduate course “Fundamentals of Microscale Phenomena” and the undergraduate course “Heat Transfer”. His doctoral work has been published in Federation of American Societies for Experimental Biology, PloS One, and Micromachines.

Academic Credentials & Professional Honors

Ph.D., Mechanical Engineering, Johns Hopkins University, 2022

M.S.E., Mechanical Engineering, Johns Hopkins University, 2019

B.S., Nanoengineering, University of California, San Diego, 2017

Licenses and Certifications

NAMSA ISO 10993 Series 1 Biocompatibility Testing, Evaluation and Risk Management

PADI Advanced Open Water Scuba Certification

Languages

Spanish

Tamil

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Publications

Sung, H.W.; Choi, S.-E.; Chu, C.H.; Ouyang, M.; Kalyan, S.; Scott, N.; Hur, S.C. Sensitizing Drug-Resistant Cancer Cells from Blood Using Microfluidic Electroporator. PLOS ONE 2022

McKay, G.N.; Huang, L.; Bobrow, T.L.; Kalyan, S.; Hur, S.C.; Lanzkron, S.; Pecker, L.H.; Moliterno, A.R.; Durr, N.J. A Model for Generating Paired Complete Blood Count and Oblique Back-Illumination Capillaroscopy Data in Tissue-Realistic Microfluidic Chambers. In Proceedings of the Imaging, Manipulation, and Analysis of Biomolecules, Cells, and Tissues XX; SPIE, 2022

Kalyan, S.; Torabi, C.; Khoo, H.; Sung, H.W.; Choi, S.-E.; Wang, W.; Treutler, B.; Kim, D.; Hur, S.C. Inertial Microfluidics Enabling Clinical Research. Micromachines 2021

McKay, G.N.; Bobrow, T.L.; Kalyan, S.; Hur, S.C.; Durr, N.J. Optimizing White Blood Cell Contrast in Graded-Field Capillaroscopy Using Capillary Tissue Phantoms. In Proceedings of the Imaging, Manipulation, and Analysis of Biomolecules, Cells, and Tissues XVIII; SPIE, 2020

Tu-Sekine, B.; Padhi, A.; Jin, S.; Kalyan, S.; Singh, K.; Apperson, M.; Kapania, R.; Hur, S.C.; Nain, A.; Kim, S.F. Inositol Polyphosphate Multikinase Is a Metformin Target That Regulates Cell Migration. FASEB J 2019

Presentations

S. Kalyan and S.C. Hur, Expanding Vortex Trapping Capabilities to Target Small, Non-Cancerous Cells, Poster Number TB-208.A MicroTAS, Palm Springs, CA, 2021

S. Kalyan and S.C. Hur, Expanding Vortex Trapping Capabilities to Target Small, Non-Cancerous Cells, Poster Number 108-2583 Biomedical Engineering Society, Orlando, FL, 2021