Sadasivan (Sadas) Shankar: Biographical Summary

Sadasivan (Sadas) Shankar is Research Technology Manager at SLAC National Laboratory and an Adjunct Professor in Stanford Materials Science and Engineering. He is also an Associate in the Department of Physics at Harvard University, and was the first Margaret and Will Hearst Visiting Lecturer in Harvard and the first Distinguished Scientist in Residence at the Harvard Institute of Applied Computational Sciences. He has co-instructed classes related to design of materials, computing, and sustainability in materials for which he received Excellence in Teaching award. He is currently involved in research in materials, chemistry, and specialized AI methods for complex problems in physical and natural sciences, and new frameworks for studying computing. He is a co-founder of and the Chief Scientist at Material Alchemy, a "last mile" translational and independent venture that has been recently founded to accelerate the path from materials discovery to adoption, with environmental sustainability as a key goal.

Dr. Shankar and his team have enabled several critical technology decisions in the semiconductor industrial applications of chemistry, materials, processing, packaging, manufacturing, and design rules for over nine generations of Moore's law including First advanced process control application in 300 mm wafer technology; introduction of flip-chip packaging, 100% Pb-elimination in microprocessors, design of new materials, processing methods, reactors etc. Dr. Shankar managed his team members distributed across multiple sites in US, with collaborations in Europe, Russia, and Israel. The teams won several awards from the Executive Management. He is a co-inventor in over twenty patent filings covering areas in new chemical reactor designs, semiconductor processes, bulk and nano materials, device structures, and algorithms. He is also a co-author in over hundred publications and presentations in measurements, multi-scale and multi-physics methods spanning from quantum scale to macroscopic scales, in the areas of chemical synthesis, plasma chemistry and processing, non-equilibrium electronic, ionic, and atomic transport, energy efficiency of information processing, and machine learning methods for bridging across scales, and estimating complex materials properties and in process control.

Dr. Shankar was an invited panelist to the Carnegie Science series on Brain and Computing (2020), lecturer in the Winter Course on Computational Brain Research in IIT-M (2020), invited participant in the Kavli Institute of Theoretical Physics program on Cellular Energetics in UC-SB (2019), invited speaker to the Camille and Henry Dreyfus Foundation meeting on Machine Learning (2019), a Senior Fellow in UCLA Institute of Pure and Applied Mathematics during the program on Machine Learning and Many-body Physics (2016), invited to White House event for starting of the Materials Genome Initiative (2012), Intel's first Distinguished Lecturer in Caltech (1998) and MIT (1999). He has also given several colloquia and lectures in universities all over the world and his team's work was also featured in the journal Science (2012) and in TED (2013).