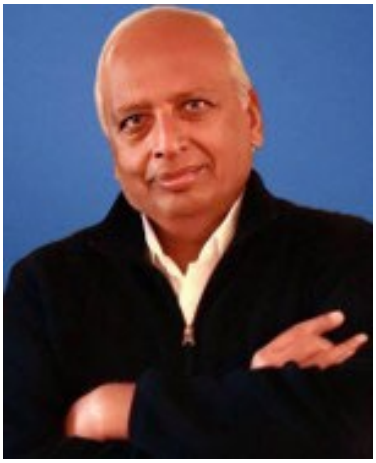
Dr. T.S. Sudarshan, FASM
Senior Vice President-Elect (2026-2027)



T.S. Sudarshan Ph.D.
President and CEO
Materials Modification Inc.
Fairfax, Va.

Tirumalai Sudarshan (Suds) is the president of Materials Modification Inc. He received his B.Tech. from IITM and M.S. and Ph.D. from Virginia Tech. He worked as a senior metallurgist at Ashok Leyland on materials testing, failure analysis and surface modification, and heat treatment techniques. Later as the Director of R&D at Synergistic Technologies in Virginia, Sudarshan worked on electrodeposition of cutting tools and gun barrels. For the past 40 years, he has been developing new technologies and applications related to surface engineering and nanotechnology with applications in numerous fields. He has been active in various committees and is currently the chair of the ASM-IIM Lectureship Committee. Sudarshan chaired the Surface Engineering Critical Technology sector at ASM and was founding chair of the Surface Modification Committee at TMS. He has been a member of IMR, JMEP, AM&P, and numerous awards committees at ASM International where he previously served as a trustee from 2014-2017.

Sudarshan was the recipient of a Design News Award and R&D 100 award for the microwave plasma technique (Nanogen) and the Plasma Pressure Compaction (P2C) technique, as well as receiving the SME Outstanding Young Manufacturing Engineer award. He served on numerous committees for the NSF, NIH, U.S. Army, Michigan Economic Development Council, National Research Council, Ohio Third Frontier, ASM International, and TMS. Sudarshan has served on the technical advisory boards of numerous companies over the past two decades. He is currently the editor of two journals, Materials and Manufacturing Processes and Surface Engineering, and previously worked on Materials Technology. He is a Fellow of ASM, IFHTSE, and IMMM, as well as a Distinguished Alumnus of IITM and previous member of the National Materials Advisory Board. He is the coauthor of over 200 publications and coeditor of 36 books, holder of 38 patents, and has presented over 60 plenary and keynote lectures around the world.

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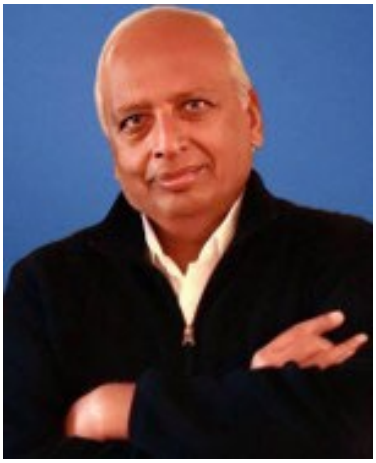

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Abstract

Promises in the Kaleidoscope of Coatings and Surfaces

The field of coatings has grown by leaps and bounds with the advancement of processing equipment, analytics and innovative chemistry to introduce solutions for a never-ending set of requirements. Unlike in the past, university and Industries are working in tandem to bring to market many solutions that are affordable and with reduced toxicity and ease of application. Global expansion of manufacturing has improved the ability to arrive at solutions that are easily transferable with acceptable performance or durability at a cost that is acceptable to the end user especially in engineering applications. While some of the approaches have established the science by drawing upon nature, the technology and development are evolving and innovating at a galloping speed. Endless possibilities are now feasible, leading to the need for a whole new generation of materials scientists that can harness the value of machine learning and artificial intelligence in the years ahead.

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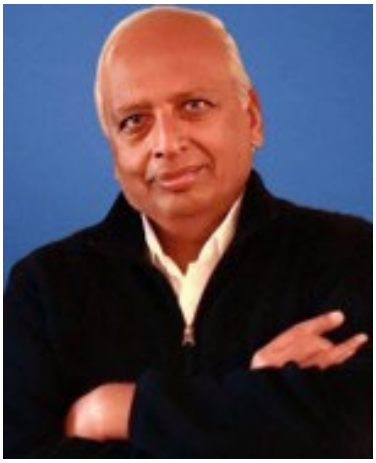

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Abstract

Dynamic Advances in Materials and Surfaces

In the last few years, significant number of advances have taken place in a wide range of areas in both materials and processes. The benefits obtained for many of these innovations will significantly expand the use of new products and applications and lead to revenue growth with significant potential. The ability to expand these opportunities through entrepreneurship can provide for sustainability and the potential for acquisition by larger players. The burgeoning space and defense industries will benefit a lot from many of these advancements and provide for a reorientation of many large industries by creating products that will need a newly skilled workforce. Innovations in technologies for characterization will also speed up the fields of product quality and ability for many industries to offer their services to various international companies.

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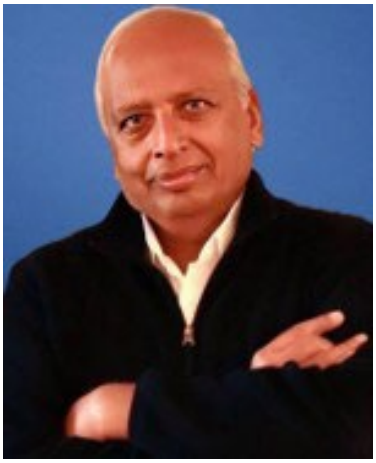

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Abstract

What Engineers Can Learn from Nature

Nature has perfected the form, shape and surfaces of every conceivable structure. The vast magnitude of lessons to be learned in the area of structural and surface modification continues to be an inspiration to scientists and engineers who build things from the top down while nature works from the bottom up. Advances in nanotechnology coupled with modeling, imaging, diagnostics and sensors provides a spectrum of capabilities to emulate nature. In this talk, I will highlight specific examples of the intelligent use of materials by nature and its ability to modify a surface for many functional uses. The industrial applications of these approaches as well as the numerous challenges and areas of research for young scientists and engineers will also be addressed. By emulating nature through its perfection we can all achieve unbelievable things for the benefit of society now and in the future.