Dr. T.S. Sudarshan, FASM
Vice President (2025-2026)

T.S. Sudarshan Ph.D.
President and CEO
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T.S. SUDARSHAN (Suds) is currently the President and CEO of Materials Modification, Inc. He received his B.Tech. in Metallurgy from the Indian Institute of Technology in Madras, India, and his M.S. and Ph.D. in Materials Engineering Science from Virginia Tech. He worked with Ashok Leyland in the Truck and Bus division as a Senior Metallurgist and later as the Director of R and D at Synergistic Technologies Richmond, Va. For the past 40 years he has been responsible for the management and technical development of innovative materials, processes, and techniques and the development of new technologies related to surface engineering and nanotechnology. He has been active in various committees throughout his career and is currently the Chair of the ASM-IIM lectureship committee. He also chaired the Surface Engineering Critical Technology sector and has been a member of IMR, JMEP, AMP and numerous Awards committees and has also served as a Trustee of ASM International and is currently the Vice President.

Dr. Sudarshan has been the recipient of numerous awards and honors, including the Design News Award and R&D 100 for the microwave plasma technique" Nanogen" and for the Plasma Pressure Compaction technique and the Outstanding Young Manufacturing Engineer award from SME. He has served on numerous committees for decades of the National Science Foundation, National Institutes of Health, U.S. Army, Michigan Economic Development Council, Department of Energy, National Research Council, Ohio Third Frontier and ASM International–The Materials Information Society. He has also served on the technical advisory boards of numerous companies over the last two decades. Dr. Sudarshan is also the editor of two journals Materials and Manufacturing Processes for 37 years and Surface Engineering for more than 28 years and Materials Technology for 4 years. He is a Fellow of ASM International, Fellow of International Federation for Heat Treatment and Surface Engineering and Fellow of Institute of Mining, Metals and Materials, UK and Distinguished Alumnus of IITM and was a member of the **National Materials Advisory Board** and has served on numerous NRC committees. He is the coauthor of over 200 publications and coeditor of 36 books including 30 books on surface modification technologies and holder of over 38 patents, developed 18 products and has given over 65 plenary and keynote lectures throughout the world and taught numerous short courses on surface engineering and nanotechnology in several countries.

Abstract – Promises in the Kaleidoscope of Coatings and Surfaces

Dr. T.S. Sudarshan, Vice President

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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.

Abstract – Dynamic Advances in Materials and Surfaces

Dr. T.S. Sudarshan, Vice President

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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 a 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.

Abstract – What Engineers Can Learn from Nature

Dr. T.S. Sudarshan, Vice President

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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.

Abstract – The Power of Patterning Surfaces

Dr. T.S. Sudarshan, Vice President

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In recent times the availability of tools has enabled the ability to pattern surfaces with precision and with unique functionalities. Various metrics of measure have helped enhance the possibilities as well as control the locations where the patterns can be created. The ability to tailor surfaces with different patterns on the same substrates to provide unique characteristics has opened up the possibilities in thermal management, friction and wear, biobased applications and optical control. The vastness of this field will be highlighted and the applications to some newer applications highlighted. The surface engineer has now the unique ability to not only treat conventional engineering surfaces but can also treat biological surfaces for improved response with reduced inflammation. Finally, the inspiration drawn from nature to create surfaces and patterns provides the unique features that can expand the imagination of researchers in developing creative solutions especially in practical applications for the benefit of society.