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Bio-inspired Science and Engineering & Industry 4.0 Revolution

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May 24 (Friday) | 11:00 AM
Ford Design Center, ITW Classroom 1-350

ABSTRACT Nature has demonstrated unique abilities to converge sciences, engineering, art and philosophy to manufacture 8,000,000 species in air, ground and water. Manufacturing in Nature is an ultimate sustainable production plant driven by fundamental motives to survive and thrive. Current research and education endeavors have been investigating this subject and uncovering applications of this learning for engineering advanced product applications. This talk will discuss the unique opportunities that bio-inspired science and engineering bring at the on-set of the 4th Industrial Revolution driven by Cyber Physical Systems.

BIO Malshe's fields of interest are advanced manufacturing, bio-inspired materials designing and system integration. He has overlapping 23 years of academic plus 15 years of industrial entrepreneurship experience. Application areas of his interest are large scale integrated systems, engineering in nature and social entrepreneurship.

He has 225 peer-reviewed publications and has delivered 105 keynote and invited talks across the United States and the world. He has 22 allowed patents with more than 65 resulting products commercialized and launched, in a team, across many industrial sectors worldwide used by Fortune 500 companies in the energy, electric vehicle, heavy-duty trucking, railway transportation, and high performance race car sectors.

Malshe's notable honors include: Membership in the National Academy of Engineering (NAE) and the Society of Manufacturing (SME); David Dornfeld Blue Sky Manufacturing Idea Award for "Factories-In-Space"; SME-S.M. Wu Research Implementation Award; three Edison Awards for Innovation; Tibbett Award by the US Small Business Association sponsored by EPA for successful technology transfer; R&D 100 Award, (the "Oscar" of innovation); Fellowships to the International Academy of Production Engineering (CIRP), the American Society of Materials (ASM), the American Society of Mechanical Engineering (ASME), and the Institute of Physics (IoP), London, England; multiple best paper awards; NanoBusiness Alliances' Lifetime Achievement Award and Most Influential Nanotechnology Leaders award; and Special recognition under "Discoveries" from NSF for a new process, "Electric Pen Lithography (EPL) for sub-20 nm scale machining using nanoEDM. Malshe has trained 67 graduate and post-doctoral students and more than 1250 undergraduate students and young professional engineers. He has also worked extensively with high schools to advance student learning success.

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