



### **Dr. Ajay Malshe**

Twenty-First Century Professor of Materials, Manufacturing, and Integrated Systems, Professor of Mechanical Engineering, Director of Materials and Manufacturing Research Laboratories, Adj. Faculty at High Density Electronics Center - Mechanical Engineering

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**Ajay P. Malshe** (Ph.D., 1992; FInstP) is the 21<sup>st</sup> Century Endowed Chair Professor of Materials, Manufacturing Processes and Integrated Systems at the Department of Mechanical Engineering and adjunct-faculty of Electrical Engineering as well as Microelectronics and Photonics Program. He is the Director of the Materials and Manufacturing Research Laboratories (MMRL; a cluster of 5 laboratories).

Dr. Malshe has multidisciplinary research programs in the field of nanomanufacturing, IC, MEMS and micro and nano device packaging and integration, and surface engineering for advanced machining. He has authored over one hundred and twenty five peer reviewed publications, four book chapters, and holds seven patents. His landmark scientific and engineering contributions are nano-particle composite coatings particularly cubic boron nitride - titanium nitride composite coating (cBN-TiN), electric discharge machining (electric pen lithography- EPL; nanoEDM), wafer level chip scale packaging of MEMS and related microsystems, nano stamping of quantum structures, nano-mechanical machining system-on-a-chip, chemo-mechanical as well as laser polishing of diamond films, femtosecond laser for chemically clean nano and micro machining of difficult-to-machine materials.

Dr. Malshe has received twenty awards for research, education and service achievements (1996-2006). The most recent prestigious recognitions, Frost & Sullivan 2005 Technology Excellence Award and 2006 Top 25 Micro and Nano Innovations from R&D Magazine and Micro/Nano Newsletter are due to his team's invention contribution in the area of cBN-TiN nanocomposite coating. He is a Fellow of Institute of Physics, London, UK and is listed in Lexinton's Who's Who. He has graduated over thirty graduate students (PhD/MS), trained numerous post-doctoral fellows, and provided research experience to several undergraduate and high school students.

Dr. Malshe has an extensive track record of global collaborations with academic institutions and companies. Prof. Malshe is the Chief technology Officer (CTO) of the two companies he has co-founded in the fields of nanomanufacturing and high-density Microsystems packaging (OmniPak LLC) in the state of Arkansas. Particularly, he is Co-founder and Chief Technology Office (CTO) of NanoMech LLC (NanoMech LLC; [www.nanomech.biz](http://www.nanomech.biz)). NanoMech is enabling launch of three nanomanufactured new products, namely TuffTek<sup>®</sup>, NanoGlide<sup>®</sup>, and Guard-In-Fresh<sup>®</sup>. Particularly, TuffTek<sup>®</sup> is cBN composite coating for cutting tools, dies and molds, and related abrasive and wear resistance coating applications. He is a member of professional societies such as ASME, SME, IEEE, MRS, ASEE and IMAPS, and has arranged and chaired sessions and symposia in the areas of his expertise.