

The Department of Mechanical Engineering presents:

Dr. K. Morsi

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Department of Mechanical Engineering
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11:10AM-12:00PM
EBU II 205/206

Powder-based Advanced Materials Processing

Abstract: Powder-based materials are an integral part of materials science today, greatly benefiting ceramics, intermetallics, metals and composites. This presentation will focus on new powder-based manufacturing processes being developed at the Department of Mechanical Engineering, San Diego State University (SDSU). The presentation will be a detailed overview of some of our current work in the area of powder-based materials research. Novel Current-Activated Tip-based Sintering (CATS) will be discussed. The process allows the localized sintering of powders to produce structures on the macro, micro or nano-scales. Recent research results on CATS will be discussed; in addition to outlining its future potential. Research on the processing of carbon-nanotube reinforced aluminum composites, a material system of substantial current scientific interest, will also be presented. Finally, G.A.M.E. (Gaming for Applied Materials Engineering) will be introduced, which is an interactive game-based materials lab simulation software currently being developed at SDSU.

Bio: Dr. Morsi obtained his PhD in 1996 from the Department of Materials, University of Oxford, England, in the processing and properties of particulate reinforced ceramic matrix composites. Following his PhD he joined the Department of Materials, Imperial College-London as a Post Doctoral Research Associate, working on the hot extrusion reaction synthesis of Intermetallics. He then joined the Department of Mechanical & Aerospace Engineering, University of Missouri-Columbia in 1999 as an Assistant Professor. He is currently a Professor of Mechanical Engineering at San Diego State University, having joined the department in 2003 as an Associate Professor. Dr. Morsi's research area is Materials Science with a focus on processing and properties of metals, intermetallics, ceramics and their composites. He has published numerous journal articles in the areas of powder metallurgy and materials processing, and most of his current work is funded by the National Science Foundation. His research group's current activities and interests include spark plasma processing, processing of nanotube reinforced composites, the development of lightweight in-situ dual matrix composites, and processing-microstructure-properties relations in materials. He has taught on various topics including Nanomaterials, Powder Metallurgy, Engineering Materials, Advanced Materials Processing, Thermodynamics and Heat Transfer. He is the recipient of the 2006 Northrop Grumman Excellence in Teaching Award. He is also the Chair of the Powder Materials Committee at the Minerals, Metals and Materials Society (TMS).

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