School of Industrial Engineering

CENTER FOR MATERIALS PROCESSING AND TRIBOLOGY DISTINGUISHED SEMINAR

COLD SPRAY COATING TECHNOLOGY: AN OVERVIEW

G. Sundararajan

Director, International Advanced Research Centre for Powder Metallurgy and New Materials, India
Professor, Department of Metallurgy and Materials Engineering, IIT Madras, Chennai, India

Thursday, November 7, 2013 – 11 AM
Potter 234, The K.S. Fu Room

Abstract Cold spray coating process is a relatively new thermal spray process in which powder particles (1 to 50 μm in diameter) are accelerated to velocities of the order of 500 to 1000 m/s in a supersonic jet of high pressure gas. Upon striking a target surface, the particles undergo severe plastic deformation and form a coating on the target, which is built up layer by layer. It bears immense promise especially for retaining the microstructure present in the feedstock as it is not heated in the jet to the point where any significant chemical/microstructural changes are experienced. The presentation will overview key aspects of the process including particle diagnostics, influence of cold spray process parameters and heat treatment on coating quality and properties, microstructure and coating performance. The immense promise of cold spray technology for applying cost effective corrosion resistant coatings (zinc based alloys and stainless steel) will be demonstrated along with a comparison of performance of coatings from conventional thermal spraying techniques.

Dr. Sundararajan obtained his B.Tech (Metallurgy) from IIT Madras in 1976, and M.S and Ph.D from Ohio State University, Columbus, OH, in 1979 and 1981, respectively. He then joined the Indian Defence Metallurgical Research Laboratory (DMRL) as a scientist. In 1997, he was appointed as Director of International Advanced Research Centre for Powder Metallurgy and New Materials (ARCI).

Dr. Sundararajan has made outstanding contributions to the areas of tribological behavior of metallic materials, composites and coatings, high temperature deformation and fracture behaviour of superalloys, laser surface modification and laser materials processing of engineering materials, and coating technologies. As ARCI Director, he has contributed to the development, demonstration and commercialization of materials-based technologies. In the last 10 years, over 35 technologies have been transferred to private industries across India.

Dr. Sundararajan is a Fellow of the American Society for Materials (2005) and the American Ceramic Society (2012). He is also a Fellow of the Indian Academy of Sciences (1992), Indian National Science Academy (1996) and the Indian National Academy of Engineering (1999). He has published more than 230 papers in refereed international journals and peer-reviewed conference proceedings, and guided the Ph.D work of many of his colleagues at DMRL and ARCI. He is currently the Vice President of the Indian Academy of Sciences and President of the Materials Research Society of India.

Contact: S. Chandrasekar (chandy@ purdue.edu)