

**Speaker: Prof. Dr Amir Azam Khan**

**Title: Thermal Plasma Sprayed Calcia Stabilized Zirconia (CSZ) Thermal Barrier Coatings (TBCs) for Aerospace Applications.**

Thermal Plasmas have emerged as one of the most important source of energy since 1960's and their use in Thermal Spraying of refractory ceramics is increasing day by day. One recent variation in this domain is the DC Blown Arc Thermal Plasmas, different from the Transferred Arc Plasmas classically used for cutting thick metallic sections. DC Blown Arc Plasma guns are small in size, and as the plasma plume is generated within the gun, no contact with the substrate is required. Hence the gun distance and gun position can be varied independent of the substrate nature and surface properties. Coatings on materials like wood and plastics are also possible with this technique.

In the present work a powder of CSZ is used to produce thick zirconia coatings on different steel substrates. The objective is to produce adherent coatings with adequate mechanical and insulating properties. Porosity and initial particle size distribution are the two most important parameters which are studied. The results show a promising improvement in coating microstructure when the starting powder is leached and a more close packed powder size distribution is used. Powder is analyzed using a Laser Particle Size Analyzer (Horiba LA 920) and coating microstructure and structure is studied using SEM (JEOL LV 4690) and XRD (STOE/Diffractometer) respectively.

#### BRIEF ABOUT THE AUTHOR:

Dr Amir Azam Khan has joined the Department of Mechanical and Manufacturing Engineering, UNIMAS in December 2009. He specializes in Ceramics, Ceramic Based Coatings, Surface Engineering and Laser Treatment of Surfaces. He has more than 30 Papers to his credit and has been awarded Best Scientist award by the Third World Academy of Sciences in 2001. He was also awarded Excellence in Academics award by the French Government (Palmes Académiques) for his contribution to the collaboration with France in the Academic Field.