

## Properties of Plasma Sprayed Coatings

C.X. Ding, Y.F. Zhang and J.Y.Xia

*Shanghai Institute of Ceramics, Chinese  
Academy of Sciences, 1295 Ding Xi Road,  
Shanghai 200050, China*

### ABSTRACT

Some coatings such as thermal barrier, wear resistance and chemical catalyst have been prepared by an atmosphere plasma torch. The physical, mechanical and thermal properties of coatings were measured. The microstructural features of the coatings were examined. The results obtained indicated that the type of lamellar microstructure of coatings dictates the specific properties. Being built up with melted powder, plasma sprayed coatings usually contain some porosity with a value of about 5-30% of the volume of coatings. The bend strength of different coatings is closely related with their constituents. The thermal diffusivity of most oxide coatings is less than bulk ceramics resulting from the lamellar microstructure of coatings, which is very useful for thermal protection. Plasma sprayed ceramic and cermet coatings possess high surface hardness, low friction coefficient and good adhesive bonding to substrate. The polarization potential of porous nickel coating is closely related to its porosity. The higher the porosity of the coating, The lower its polarization potential.