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Effect of stand-off distance (SOD) on damping properties of atmospheric plasma sprayed alumina-zirconia ceramic coatings

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Abstract

Alumina–25 wt-% zirconia (AZ) coatings were deposited on AISI304 stainless steel substrates by atmospheric plasma spraying (APS) technique with three different stand-off distances (SOD) namely, 75, 100 and 125 mm. X-ray diffraction (XRD) and scanning electron microscopy (SEM) techniques were utilized to study the phases and microstructures of the coatings, respectively. Surface roughness and percentage of open porosity of the coatings were also quantified by confocal laser scanning microscopy (CLSM) and SEM image analysis through Material Plus software, respectively. Finally, dynamic mechanical analyser (DMA) was employed for thorough investigation of the damping behaviours of the AZ coatings deposited at SODs conditions

Keywords:

Alumina 25% Zirconia Coating, Damping Properties, Surface Roughness, Porosity, Microstructure

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