

## Characterisation and in vitro Corrosion Resistance of Plasma Sprayed Hydroxyapatite and Hydroxyapatite: Silicon Oxide Coatings on 316L SS

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**Abstract :** In the current investigation plasma spray technique was used for depositing hydroxyapatite (HA) and HA - silicon oxide (SiO<sub>2</sub>) coatings on 316L SS substrate. In HA-SiO<sub>2</sub> coating, 20 wt% SiO<sub>2</sub> was mixed with HA. The feedstock and coatings were characterized by X-ray diffraction (XRD) and scanning electron microscopy (SEM)/energy-dispersive X-ray spectroscopy (EDX) analyses. The corrosion resistance of the uncoated, HA coated and HA + 20 wt% SiO<sub>2</sub> coated 316L SS was investigated by electrochemical corrosion testing in simulated human body fluid (Ringer's solution). The influence of SiO<sub>2</sub> (20 wt%) on corrosion resistance was determined. After the corrosion testing, the samples were analyzed by XRD and SEM/EDX analyses. The addition of SiO<sub>2</sub> reduces the crystallinity of the coating. The corrosion resistance of the 316L SS was found to increase after the deposition of the HA + 20 wt% SiO<sub>2</sub> and HA coatings.

**Keywords :** HA, SiO<sub>2</sub>, corrosion, Ringer's solution, 316L SS

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