Effect of pH electrolyte on alumina-based coating produced via electrolyte plasma method

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Abstract

Due to economical and environmental issues, electrolyte plasma technique is considered as one of the reliable methods for formation of high temperature oxy-ceramic coating. However, the work remains here still a lot and requires synthesizing the method in terms of process parameters. Among other things, pH variations of the electrolyte specify final properties of the coating such as thickness, corrosion properties and morphological microstructure. This study therefore aims to examine pH effect at three levels, acidic, basic and neutral, on corrosion resistance of the resulting coating. Microscopic images reveal that those coatings formed at higher pH showing better corrosion resistance along with more uniform surface rather than others.

Keywords: Coating, pH, Electrolyte plasma, alumina based coating