

Mechanical Properties of Nanocomposites Cobalt Matrix with Nano SiC Particles

Authors : Dhuha Albusalih, David Weston, Simon Gill

Abstract : Nanocomposites Co-SiC with well dispersed nanoparticles and Co nano grain size has produced using Pulse Reverse Plating (PRP) and using anionic surfactant. Different particle contents of nanocomposites were produced by altering the plating parameters. The method allows great control over the level of nanoparticles in the coating, without changing bath chemistry. Examination by Scanning Electron Microscopy (SEM), Energy Dispersive Spectroscopy (EDX), TEM and X-Ray Diffraction (XRD) analysis was performed to characterize and study the strengthening mechanisms of these nanocomposites. The primary strengthening mechanisms were shown to be grain refinement and dispersion strengthening. Tribological performances of the produced electroplated nanocomposite Co-SiC coatings were examined. Results showed that the coating with the higher volume fraction (vol. %) of SiC and the smallest grain size has the higher hardness and low wear rate.

Keywords : nanocomposites, pulse reverse plating, tribological performance of cobalt nanocomposites

Conference Title : ICCEM 2017 : International Conference on Composite Engineering and Manufacturing

Conference Location : Barcelona, Spain

Conference Dates : August 17-18, 2017