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WEAR PROPERTIES OF PLASMA NITRIDED INCONEL 718 SUPERALLOY

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Inconel 718 is a nickel-based superalloy that is extensively used in a broad range of applications such as turbine blades, power generation, petroleum and nuclear reactor technology due to its good mechanical properties at intermediate and high temperatures. Contrast to its wide range of usage, high plasticity and good corrosion resistance, poor wear resistance of Inconel 718 limits its usage in some applications. In order to improve the wear resistance of Inconel 718 several surface treatment methods are used. One of the most important methods, that is used to prevent the metal from wear is to modify the surface with a nitride layer by plasma nitriding. In this study Inconel 718 super-alloy was plasma nitrided in different parameters and the wear mechanism of plasma nitrided Inconel 718 was investigated using a pin-on-disk wear tribotester. Microstructure and phase components of Inconel 718 were investigated using SEM and XRD before and after plasma nitriding process.

Keywords

Wear

Superalloy

Plasma Nitriding

Inconel 718