

ABSTRACT

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Novel Infrared-Processed Titanium Composite Coatings for High Temperature Galling Resistance

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Titanium alloys offer high strength-to-weight ratios for elevated temperature use but are susceptible to wear and galling in applications in which metal to metal contact occurs. A series of titanium composite coatings are being developed that contain significant volume fractions of refractory hard particles, such as carbides and nitrides. The coatings are applied by a novel method of infrared heating using a plasma arc lamp to provide a metallurgical bond to the coating and minimize dilution of the coatings by the substrate. The effects of coating composition and processing parameters on the microstructures of the coatings are discussed.

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