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Wear and Corrosion of Ceramic Coated Metallic Surface in Presence of Biodiesel
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Abstract

The aim of this work is to study the wear and corrosion of TiC coated steel in the presence of biodiesel. The TiC coating was developed by replacement method on the alloy steel surface using liquid additive approach with the help of TIG torch machine. The wear test was performed using CSM pin-on-disc tribometer in presence of biodiesel. The corrosion test was done using Autolab potentiostat–galvanostat corrosion analyzer in presence of biodiesel as electrolytic solution followed by characterization of the tested materials. The wear exhibited better wear resistance for the coated material due to the formation of new microstructure. The Tafel plot exhibited lower corrosion current density (I_{corr}) for the coated material compared to uncoated substrate. However, both substrate and TiC-coated steel are susceptible to corrosion under a biodiesel environment. © 2023, The Author(s), under exclusive license to Springer Nature Singapore Pte Ltd.

Author Keywords

Alloy steel; Biodiesel; Corrosion; Wear

Index Keywords

Alloy steel, Biodiesel, Steel corrosion, Titanium alloys, Titanium carbide, Voltage regulators, Wear resistance; Coated steel, Corrosion of ceramics, Corrosion tests, Liquid additives, Metallic surface, Pin on disc tribometer, Replacement methods, Steel surface, TIG torch, Wear test; Wear of materials

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