

## عنوان مقاله:

Wear behavior of laser clad Ni based-WC-La<sub>2</sub>O<sub>3</sub> hybrid composite coating on H<sub>13</sub>-Steel at elevated and ambient temperatures

## محل انتشار:

مجله ی بین المللی انجمن آهن و فولاد ایران، دوره 18، شماره 1 (سال: 1400)

تعداد صفحات اصل مقاله: 15

## نویسندگان:

Pooria Ashtari - Sahand University of Technology, Faculty of Materials Engineering, Tabriz, Iran

N. Parvini Ahmadi - Materials Engineering Faculty, Sahand University, Tabriz, Iran

Sasan Yazdani - Sahand University of Technology, Faculty of Materials Engineering, Tabriz, Iran

## خلاصه مقاله:

Hybrid composite coatings show obvious advantages over single composite coatings due to their multipurpose applications. Furthermore, nickel-based alloy matrix composite coatings are extensively used in corrosive, wear and fatigue environments because of their good wear and corrosion resistance. In this study, NiCoCrAl/tungsten carbide/ ۱-۴ wt% lanthanum oxide composite coatings are deposited on H<sub>13</sub> hot work tool steel by laser cladding. The wear resistance of the coatings is evaluated in sliding against alumina ball both at room temperature and ۷۰۰ °C. The results indicate that the wear rate of the coatings decreases at room temperature by adding ۱-۳ wt% lanthanum oxide (۷۲.۵۵×۱۰<sup>-۶</sup> mm<sup>۳</sup> N<sup>-۱</sup> m<sup>-۱</sup> for NiCoCrAl/tungsten carbide/۲ wt% lanthanum oxide). Also, the friction coefficient decreases at this level of lanthanum oxide and for the samples with ۲ and ۳ wt% lanthanum oxide the steady stage of wear begins earlier than others. At the high temperature of ۷۰۰ °C, the presence of lanthanum oxide has changed the wear mechanism from adhesive to abrasive and improved the wear performance of the coatings. At higher amounts of lanthanum oxide, debris removals is observed on the coatings where it resulted in the three-body and severe wear.

## کلمات کلیدی:

wear behavior, Laser cladding, Hybrid composite coating, lanthanum oxide, H<sub>13</sub> tool steel

## لینک ثابت مقاله در پایگاه سیویلیکا:

<https://civilica.com/doc/1662408>

