

Accepted Manuscript

Microstructure and Tribological Performance of Tungsten Carbide Reinforced
Stainless Steel Composite Coatings by Supersonic Laser Deposition

Bo Li, Jianhua Yao, Qunli Zhang, Zhihong Li, Lijing Yang

PII: S0257-8972(15)30033-5
DOI: doi: [10.1016/j.surfcoat.2015.05.040](https://doi.org/10.1016/j.surfcoat.2015.05.040)
Reference: SCT 20292

To appear in: *Surface & Coatings Technology*

Received date: 18 February 2015
Revised date: 23 May 2015
Accepted date: 25 May 2015



Please cite this article as: Bo Li, Jianhua Yao, Qunli Zhang, Zhihong Li, Lijing Yang, Microstructure and Tribological Performance of Tungsten Carbide Reinforced Stainless Steel Composite Coatings by Supersonic Laser Deposition, *Surface & Coatings Technology* (2015), doi: [10.1016/j.surfcoat.2015.05.040](https://doi.org/10.1016/j.surfcoat.2015.05.040)

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

**Microstructure and Tribological Performance of Tungsten Carbide Reinforced
Stainless Steel Composite Coatings by Supersonic Laser Deposition**

Bo Li^{1,2}, Jianhua Yao^{1,2*}, Qunli Zhang^{1,2}, Zhihong Li^{1,2}, Lijing Yang^{1,2}

¹*Research Center of Laser Processing Engineering and Technology, Zhejiang
University of Technology, Hangzhou, 310014, China*

²*Collaborative Innovation Center of High-end Laser Manufacturing Equipment,
Zhejiang Province, Hangzhou, 310014, China*

*Corresponding author: Jianhua Yao

Tel.: +86-571-88320383; Fax: +86-571-88320383-808

Email: laser@zjut.edu.cn

Abstract: Supersonic laser deposition (SLD) is a relatively new coating technique, which combines laser irradiation with cold spray (CS). The focus of this research is on the comparison between the WC/SS316L composite coatings produced by CS and SLD respectively, with respect to deposition efficiency, WC distribution and concentration, interfacial bonding, phases in the microstructures, and tribological properties, thus to highlight the beneficial effects of laser irradiation on the composite coating produced by cold spray process. The experimental results show that deposition efficiency, WC concentration and interface bonding of the composite coating can be improved by laser irradiation due to the softening of both powder particles and substrate. The SLD composite coating has the same phases as the CS coating does because of the relatively low heat involved in this process. The high concentration and strong interfacial bonding of WC particles in the SS316L matrix significantly improves the tribological properties of the SLD composite coating.

Key Words: Supersonic laser deposition; WC/SS316L composite coating; Microstructure; Tribological properties

Download English Version:

<https://daneshyari.com/en/article/8026272>

Download Persian Version:

<https://daneshyari.com/article/8026272>

[Daneshyari.com](https://daneshyari.com)