

Accepted Manuscript

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PII: S1044-5803(17)30765-9
DOI: doi: [10.1016/j.matchar.2017.06.020](https://doi.org/10.1016/j.matchar.2017.06.020)
Reference: MTL 8721
To appear in: *Materials Characterization*
Received date: 15 March 2017
Revised date: 1 June 2017
Accepted date: 14 June 2017



Please cite this article as: Long Xin, Yonghao Lu, Tetsuo Shoji , The role of material transfer in fretting wear behavior and mechanism of Alloy 690TT mated with Type 304 stainless steel, *Materials Characterization* (2017), doi: [10.1016/j.matchar.2017.06.020](https://doi.org/10.1016/j.matchar.2017.06.020)

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The role of material transfer in fretting wear behavior and mechanism of Alloy 690TT mated with Type 304 stainless steel

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Abstract

This study aimed to investigate the role of material transfer in fretting wear behavior and mechanism of Alloy 690TT mated with Type 304 stainless steel (SS). Results indicated that the unidirectional material transfer from 304SS to Alloy 690TT occurred in gross slip regime and partial slip regime. Reciprocal material transfer of friction pair occurred in mixed fretting regime. A new type of nanostructured tribologically transformed structure (Type-1 TTS) was found between the third body layer (TBL) and the conventional Type-2 TTS layer. And Type-1 TTS with an average grain size of 52 nm was attributed to material transfer and subsequently mechanical

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