

Accepted Manuscript

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PII: S1044-5803(16)31378-X
DOI: doi: [10.1016/j.matchar.2017.03.006](https://doi.org/10.1016/j.matchar.2017.03.006)
Reference: MTL 8586

To appear in: *Materials Characterization*

Received date: 21 December 2016
Revised date: 1 March 2017
Accepted date: 7 March 2017

Please cite this article as: Alireza Sadeghi, Nobuhiko Kyokuta, Junya Inoue, Toshihiko Koseki, Effect of initial texture and microstructure of Mg on mechanical properties of Mg – Stainless steel laminated metal composites. The address for the corresponding author was captured as affiliation for all authors. Please check if appropriate. Mtl(2017), doi: [10.1016/j.matchar.2017.03.006](https://doi.org/10.1016/j.matchar.2017.03.006)

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Effect of Initial Texture and Microstructure of Mg on Mechanical Properties of Mg – Stainless Steel Laminated Metal Composites

Alireza SADEGHI¹, Nobuhiko KYOKUTA², Junya INOUE³, Toshihiko KOSEKI⁴

1 (Corresponding Author) School of Mechanical Engineering, College of Engineering, University of Tehran, Tehran, Iran. alireza.sadeghi@ut.ac.ir , Office telephone: +98 21 6111 9936

2 Nippon Steel & Sumitomo Metal Company, Fukuoka, Japan
Nobuhiko_kyokuta@metall.t.u-tokyo.ac.jp

3 Research Center for Advanced Science and Technology, The University of Tokyo. junya_inoue@metall.t.u-tokyo.ac.jp

4 Department of Materials Engineering, The University of Tokyo, Tokyo, Japan, koseki@material.t.u-tokyo.ac.jp

Abstract

Laminated metallic composites consisting of an AZ31 magnesium alloy layer and two SS304 austenitic stainless steel layers were fabricated by a reactive transient liquid phase bonding method to achieve a metallic composite exhibiting an exceptional combination of specific strength and ductility. Three different initial microstructures were selected for the Mg layer on the basis of initial texture and grain size distribution (hot-rolled small grains, hot-rolled large grains and hot-extruded large grains). During deformation, the overall texture of all three samples approached the same preferential orientation. Since the original texture of the hot-extruded sample was very different from the final preferential orientation, its slip systems were able to accommodate more deformation in the Mg layer before saturation. It was also

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