Proceedings of the 11th Polish–Japanese Joint Seminar on Micro and Nano Analysis, Gniew, Poland, September 11–14, 2016

Modification of Microstructure and Properties of Extruded Mg–Li–Al Alloys of α and $\alpha + \beta$ Phase Composition using ECAP Processing

Acta Physica Polonica A **131**, 1303 (2017), **ERRATUM**

J. Dutkiewicz[a,*], S. Rusz[b], W. Maziarz[a], W. Skuza[a], D. Kuc[c] and O. Hilser[b]

[a]Institute of Metallurgy and Materials Science, Polish Academy of Sciences, W.S. Reymonta 25, 30-059 Kraków, Poland

[b]Technical University Ostrava, Department of Mechanical Engineering, 17 Listopadu 15, Ostrava, Czech Republic

[c]Silesian Technical University, Department of Metallurgy and Materials Science, Z. Krasińskiego 8, 40-019 Katowice, Poland

Two magnesium based alloys containing 4.5 wt% Li and 1.5 wt% Al (alloy 1) and 9 wt% Li and 1.5 wt% Al (alloy 2) were cast under argon atmosphere and hot extruded at 350 °C. Microstructure of alloy 1 consisted of hexagonal α phase of average grain size 20 μm and small aluminum rich precipitates being the most probably $AlLi_2Mg$ phase. Alloy 2 in the extruded form consisted of lamellas of $\alpha + \beta$ phases of thickness 5–20 μm and length above 100 μm. Significant grain refinement down to about 2 μm was observed in one-phase hexagonal (hcp) alloy 1 after one pass of ECAP processing with helical component. Two-phase (hcp + bcc) alloy 2 showed higher non-homogeneity after the first equal channel angular pressing pass due to easier deformation of softer bcc phase, while both, α and β phases exhibited low angle grain boundaries. The hardness and the yield strength of the alloys were higher for alloy 1 (68 HV and 205 MPa, respectively) than those of alloy 2 (61 HV and 175 MPa). Subsequent equal channel angular pressing passes were performed at lower extrusion stress. The hardness of both alloys did not change significantly after subsequent equal channel angular pressing passes and revealed tendency to decrease. Two-phase alloy showed superplastic properties already after one equal channel angular pressing pass at 160 °C with grain growth after superplastic tensile testing. Single phase hcp alloy did not show such properties after 1 pass, but after a few equal channel angular pressing passes it could be superplastically formed.

original DOI: 10.12693/APhysPolA.131.1303

actual DOI: 10.12693/APhysPolA.133.III

PACS/topics: 99.10.Cd

This article was originally published on May 2017 important information was omitted, the correct version should read as below. The authors apologize for this error.

Acknowledgments

The financial support of National Science Center NCN in the frame of the OPUS research project No.2014/15/B/ST8/03184 is gratefully acknowledged.