Accepted Manuscript

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PII: S0924-0136(18)30132-8
DOI: https://doi.org/10.1016/j.jmatprotec.2018.03.027
Reference: PROTEC 15697

To appear in: *Journal of Materials Processing Technology*

Received date: 29-1-2018
Revised date: 16-3-2018
Accepted date: 28-3-2018

Please cite this article as: Chen L, Tang J, Zhao G, Zhang C, Chu X, Fabrication of Al/Mg/Al laminate by a porthole die co-extrusion process, *Journal of Materials Processing Tech.* (2010), https://doi.org/10.1016/j.jmatprotec.2018.03.027

Fabrication of Al/Mg/Al laminate by a porthole die co-extrusion process

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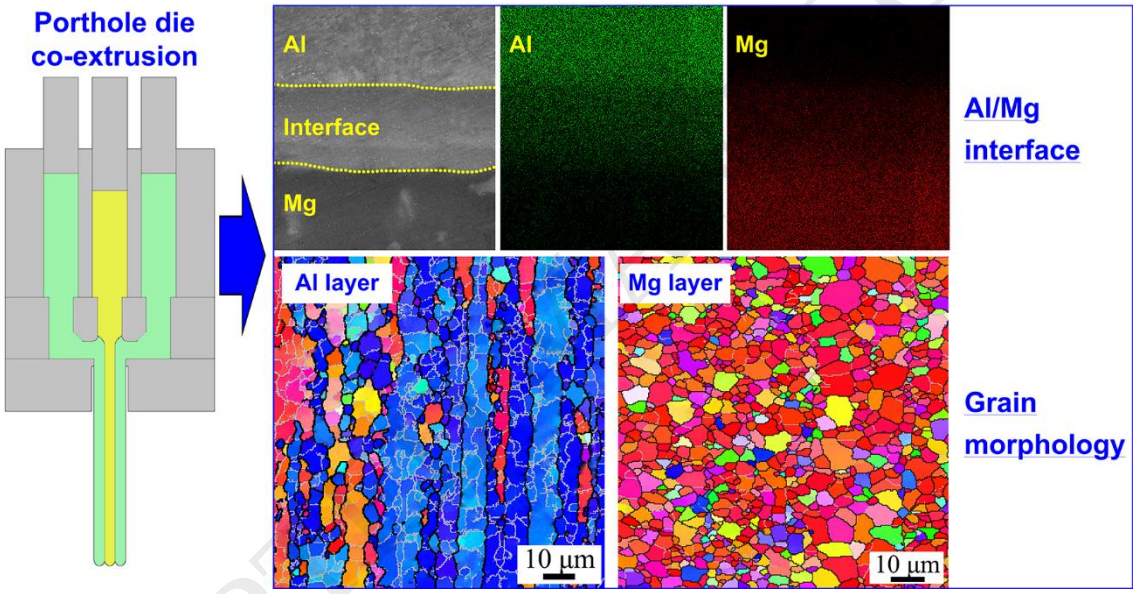
Graphical Abstract



Abstract

A porthole die co-extrusion (PCE) process was proposed to fabricate the Al/Mg/Al laminate. The results showed that the laminate was successfully extruded without voids and cracks on the Al/Mg interface. The transition layer was formed and its thickness was increased with the increase of temperature. Partial dynamic recrystallization (DRX) occurred in Al layer, and the texture of Al layer has strong E {111}<011> and Y {111}<112> shear-typed components and relative weak Copper {112}<111> and S {123}<634> rolling components. The near complete DRXed grain structure was observed in Mg layer, and the average grain size increases with increasing temperature. Mg layer has strong basal plane