Review of research progress on aluminium–magnesium dissimilar friction stir welding

L. H. Shah[ab], N. H. Othman[b] & A. Gerlich[a]
[a] Department of Mechanical and Mechatronics Engineering, Centre for Advance Materials Joining (CAMJ), University of Waterloo, Waterloo, Ontario, Canada;
[b] Faculty of Mechanical Engineering, Universiti Malaysia Pahang, Pahang, Malaysia

ABSTRACT
The paper critically assesses the research progress towards aluminium–magnesium dissimilar friction stir welding (FSW). First, the theoretical requirements are explored through the understanding of joining mechanism and heat generation in aluminium–magnesium FSW. Next, the observed trends in microstructural characterisation and mechanical properties are analysed. Finally, the effects of welding parameters and how it influences process variables and materials responses are discussed in detail, and several suggestions are made based on these discussions.

KEYWORDS:
Dissimilar welding, aluminium, magnesium, friction stir welding, joining, intermetallic compound, mechanical property, microstructural property