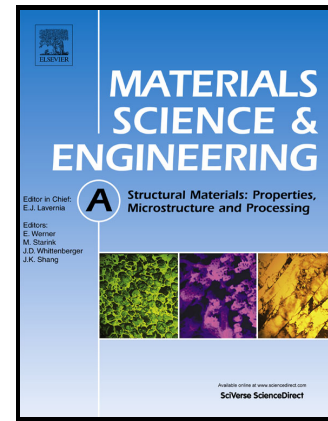


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**High strength Al with uniformly distributed Al₂O₃ fragments fabricated by
accumulative roll bonding and plasma electrolytic oxidation**

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Abstract

Accumulative roll bonding (ARB) and plasma electrolytic oxidation (PEO) were used to fabricate Al/Al₂O₃ composite. A uniform distribution of Al₂O₃ fragments was achieved within the Al matrix after six ARB cycles. In contrast to the large fragments, a small fragment contains no porosity and exhibits good bonding at interfaces. The Al/Al₂O₃ composite exhibited improved tensile strength of about 180 MPa, in comparison to the annealed Al (47 MPa).

Keywords

Composites; Sheet forming; Electron microscopy; Mechanical characterization

1. Introduction

During the last decades, metal matrix composites (MMCs) have been interested in the aerospace, automotive and recreation industries because of their unique balance between the physical and mechanical properties [1]. Compared with the conventional metal alloys, MMCs exhibit superior properties such as increased specific strength and stiffness, wear resistance, vibration damping and decreased coefficient of thermal expansion [2]. Casting and powder

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