

A. Microstructures and Mechanical Properties Evolution During Accumulative Roll Bonding of Al/Mg Composite

by M.B. Prime, T.J. Lienert, W.L. Stellwag, Jr. and R.S Casey, Los Alamos National Laboratory

Accumulative roll bonding (ARB) is a kind of severe plastic deformation process which can produce high strength metals with ultra-fine grained microstructure. Mechanical properties will be increased owing to ultrafine grain. In this study, the ARB process is used, the snap-stack working to reduplicate A1 (ASM-1100)/Mg (AZ3 1) alloy is chosen and then thinner and longer by rolling and repeating the processes. The multilayer compound between Al/Mg layers with an excellent bonding is produced and the fine microstructure is obtained in ARB process. The Microstructure morphologies were observed with a Transmission Electron Microscope (TEM). The mechanical properties were carried out using tensile test.