

## The Microstructure Development Behavior of Mg-Ag Alloy during High-Temperature Plane Strain Deformation

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**Abstract :** Magnesium and Mg-Ag system alloys are known to be promising biomaterials due to their high specific strengths and biocompatibility. Because the limited numbers of slip systems were activated in the HCP structure at room temperature, their formability was low. To solve these problems, much research about the improvement of room-temperature formability has been studied, but the microstructure development behaviors of Mg-Ag alloys were still limited. Therefore, this study was conducted to investigate the texture development behaviors of Mg-Ag alloy during high-temperature plane strain deformation. The Ag content of the Mg-Ag alloy used in this study was 3.0, 5.0, and 9.0 wt%. Hot rolling was performed at a temperature of 673K with a reduction ratio of 25%, and these specimens were annealed for 1H at 773K, followed by water quenching at room temperature. High-temperature plane strain deformation was performed under temperatures of 623K and 723K, with strain rates from 0.1/s to 0.05/s and strain from -0.4 to -1.0. As a result, it showed a microstructure and texture similar to the AZ61 alloy, which had been studied previously. It was confirmed that the basal texture became stronger with increasing strains at high-temperature plane strain deformation.

**Keywords :** Mg-Ag, texture, microstructure development behavior, AZ61

**Conference Title :** ICCM 2024 : International Conference on Composite Materials

**Conference Location :** Tokyo, Japan

**Conference Dates :** February 26-27, 2024