

عنوان مقاله:

EXPERIMENTAL ANALYSIS OF PARTITION COEFFICIENT IN Al-Mg ALLOYS

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خلاصه مقاله:

Because the partition coefficient is one of the most important parameters affecting microsegregation, the aim of this research is to experimentally analyse the partition coefficient in Al-Mg alloys. In order to experimentally measure the partition coefficient, a series of quenching experiments during solidification were carried out. For this purpose binary Al-Mg alloys containing ۶.۷ and ۱۰.۲ wt-% Mg were melted and solidified in a DTA furnace capable of quenching samples during solidification. Cooling rates of ۰.۵ and ۵ K/min were used and samples were quenched from predetermined temperatures during solidification. The fractions and compositions of the phases were measured by quantitative metallography and SEM/EDX analyses, respectively. These results were used to measure the experimental partition coefficients. The resultant partition coefficients were used to model the concentration profile in the primary phase and the results were compared with equilibrium calculations and experimental profiles. The results of calculations based on the experimental partition coefficients show better consistency with experimental concentration profiles than the equilibrium calculations.

کلمات کلیدی:

Partition Coefficient, Microsegregation, Al-Mg Alloys, Differential Thermal Analysis

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