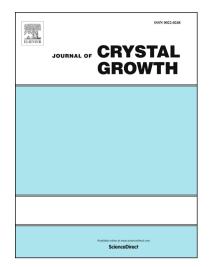
### Accepted Manuscript

Influence of solute elements (Sn and Al) on microstructure evolution of Mg alloys: an experimental and simulation study

Arushi Dev, Manas Paliwal

PII:	S0022-0248(18)30457-3
DOI:	https://doi.org/10.1016/j.jcrysgro.2018.09.032
Reference:	CRYS 24756
To appear in:	Journal of Crystal Growth
Received Date:	2 April 2018
Revised Date:	27 August 2018
Accepted Date:	19 September 2018



Please cite this article as: A. Dev, M. Paliwal, Influence of solute elements (Sn and Al) on microstructure evolution of Mg alloys: an experimental and simulation study, *Journal of Crystal Growth* (2018), doi: https://doi.org/10.1016/j.jcrysgro.2018.09.032

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

## ACCEPTED MANUSCRIPT

## Influence of solute elements (Sn and Al) on microstructure evolution of Mg alloys: an experimental and simulation study

Arushi Dev and Manas Paliwal

Department of Materials Science and Engineering, IIT Gandhinagar Palaj, Gandhinagar - 382355, India

Corresponding author: manas.paliwal@iitgn.ac.in

Submitted to Journal of Crystal Growth

#### Abstract

Wedge casting technique was employed for binary Mg alloys to obtain the solidified microstructure with the cooling rates ranging from 5 to 150 K/sec. Microstructural features such as secondary dendrite arm spacing (SDAS) and secondary phase fractions were experimentally determined. The experimental results of Mg-3.0, 6.0 and 9.0 wt. % Sn alloys were compared with Mg-Al alloys to understand the solute effect upon the evolution of SDAS and second phase fraction in Mg binary alloys. Solidification calculations that incorporate solute back diffusion, secondary arm coarsening, dendrite tip undercooling and is dynamically linked with accurate thermodynamic databases were performed for accurate analysis of the experimental results.

**Keywords**: A1.Solidification, A1. Segregation, A1. Diffusion, A1. Eutectics, A2. Wedge casting, B1. Metals.

Download English Version:

# https://daneshyari.com/en/article/11026332

Download Persian Version:

https://daneshyari.com/article/11026332

Daneshyari.com