

## Accepted Manuscript

Transmission electron microscopy study of precipitates in an artificially aged Al-12.7Si-0.7Mg alloy

Fang Liu, Fuxiao Yu, Dazhi Zhao, Liang Zuo

PII: S1044-5803(15)00156-4  
DOI: doi: [10.1016/j.matchar.2015.05.009](https://doi.org/10.1016/j.matchar.2015.05.009)  
Reference: MTL 7891

To appear in: *Materials Characterization*

Received date: 21 November 2014  
Revised date: 12 April 2015  
Accepted date: 4 May 2015



Please cite this article as: Liu Fang, Yu Fuxiao, Zhao Dazhi, Zuo Liang, Transmission electron microscopy study of precipitates in an artificially aged Al-12.7Si-0.7Mg alloy, *Materials Characterization* (2015), doi: [10.1016/j.matchar.2015.05.009](https://doi.org/10.1016/j.matchar.2015.05.009)

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.

**Transmission electron microscopy study of precipitates in an artificially aged****Al-12.7Si-0.7Mg alloy**

Liu Fang<sup>a</sup>, Yu Fuxiao<sup>a,\*</sup>, Zhao Dazhi<sup>a</sup>, Zuo Liang<sup>b</sup>

<sup>a</sup>School of Materials and Metallurgy, Northeastern University,

Shenyang 110819, People's Republic of China

\*Tel: +86-024-83687411, Fax: +86-024-83681758,

Email: fxyu@mail.neu.edu.cn

<sup>b</sup>Key Lab. for Anisotropy and Texture of Materials (Ministry of Education),

Northeastern University, Shenyang 110819, People's Republic of China,

**Abstract**

An investigation of Al-12.7Si-0.7Mg alloy aged at 160°C, 180°C and 200°C for 3 h was carried out in order to identify the precipitating phases. Regular transmission and high resolution electron microscopy (TEM and HREM) were employed for this purpose. The studies were focused on the dark spots and needle-shaped precipitates that lying in (001)<sub>Al</sub> plane. Based on the HREM observations, dark spots and needle-shaped precipitates have different characteristics. The results revealed that the ellipsoidal and needle-shaped precipitates along <100> direction of the matrix coexist in the alloy by tilting experiments at given aging condition. The ellipsoidal dark spot precipitates viewing along [001]<sub>Al</sub> is not cross-sectional image of needle-shaped precipitates along <001><sub>Al</sub>. Needle-shaped precipitate is coherent with the matrix. The diffraction pattern associated with the ellipsoidal precipitates is consistent with β'' reported in literature.

Download English Version:

<https://daneshyari.com/en/article/7970176>

Download Persian Version:

<https://daneshyari.com/article/7970176>

[Daneshyari.com](https://daneshyari.com)