

Accepted Manuscript

Effect of Co content on the mechanical properties of A2 and B2 phases in $\text{AlCo}_x\text{CrFeNi}$ high-entropy alloys

Minju Kang, Ka Ram Lim, Jong Woo Won, Young Sang Na



PII: S0925-8388(18)32847-0

DOI: [10.1016/j.jallcom.2018.07.346](https://doi.org/10.1016/j.jallcom.2018.07.346)

Reference: JALCOM 47062

To appear in: *Journal of Alloys and Compounds*

Received Date: 30 April 2018

Revised Date: 28 July 2018

Accepted Date: 30 July 2018

Please cite this article as: M. Kang, K.R. Lim, J.W. Won, Y.S. Na, Effect of Co content on the mechanical properties of A2 and B2 phases in $\text{AlCo}_x\text{CrFeNi}$ high-entropy alloys, *Journal of Alloys and Compounds* (2018), doi: 10.1016/j.jallcom.2018.07.346.

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.

Effect of Co content on the mechanical properties of A2 and B2 phases in $\text{AlCo}_x\text{CrFeNi}$ high-entropy alloys

Minju Kang, Ka Ram Lim, Jong Woo Won, Young Sang Na*

Korea Institute of Materials Science, 797 Changwondae-ro, Seongsan-gu, Changwon,
Gyeongnam 642-831, Republic of Korea

*Corresponding Author: Young Sang Na

Tel.: +82-55-280-3377, Fax.: +82-55-280-3255, E-mail: nys1664@kims.re.kr

Abstract

The effect of entropy on the strengths of the disordered and ordered phases was investigated. Cost effective $\text{AlCo}_x\text{CrFeNi}$ ($x=0, 0.25, 0.5, 0.75$, and 1) high-entropy alloys were fabricated reducing Co content. The strength was considerably reduced when the Co content was zero. This was attributed to the low hardness of the A2 phase due to reduced configurational entropy compared with quinary system. On the other hand, the ordered B2 phase showed the opposite tendency. This result shows that the configurational entropy causes opposing effects on disordered and ordered phases, and the importance of considering the effect of entropy on each phase when the number of elements changed, and an alloy is composed of two or more phases, in particular, having BCC structure.

Keywords: High entropy alloy; Indentation; Hardness

Download English Version:

<https://daneshyari.com/en/article/7990075>

Download Persian Version:

<https://daneshyari.com/article/7990075>

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