

# Accepted Manuscript

Processing, microstructure and properties of  $\text{Ni}_{1.5}\text{CoCuFeCr}_{0.5-x}\text{V}_x$  high entropy alloys with carbon introduced from process control agent

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PII: S0925-8388(16)33423-5

DOI: [10.1016/j.jallcom.2016.10.288](https://doi.org/10.1016/j.jallcom.2016.10.288)

Reference: JALCOM 39457

To appear in: *Journal of Alloys and Compounds*

Received Date: 12 July 2016

Revised Date: 14 October 2016

Accepted Date: 29 October 2016

Please cite this article as: P. Wang, H. Cai, S. Zhou, L. Xu, Processing, microstructure and properties of  $\text{Ni}_{1.5}\text{CoCuFeCr}_{0.5-x}\text{V}_x$  high entropy alloys with carbon introduced from process control agent, *Journal of Alloys and Compounds* (2016), doi: 10.1016/j.jallcom.2016.10.288.

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1 **Processing, microstructure and properties of  $\text{Ni}_{1.5}\text{CoCuFeCr}_{0.5-x}\text{V}_x$  high entropy**  
2 **alloys with carbon introduced from process control agent**

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13 **Abstract**

14  $\text{Ni}_{1.5}\text{CoCuFeCr}_{0.5-x}\text{V}_x$  ( $x = 0.25, 0.5$  mol) high entropy alloys (HEAs) have been  
15 prepared by mechanical alloying (MA) and spark plasma sintering (SPS). During MA,  
16 a small amount of carbon has been introduced from the decomposition of process  
17 control agent into the HEAs. Phase composition, microstructure and mechanical  
18 properties of the alloys were studied systematically. During MA process, FCC and  
19 BCC structured supersaturated solid solutions were formed in the HEA powders. After  
20 SPS, BCC phase in the MA state disappeared, while two FCC phases (named FCC1  
21 and FCC2) and minor carbides were observed in the bulk HEAs. The carbides in the

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