

Accepted Manuscript

Microstructure evolution and mechanical performance of nickel based superalloy C1023 at elevated temperatures

Yahui Liu, Jun Wang, Maodong Kang, Feifei Mao, Jianzhong Li, Guoxiang Wang, Shuxian He, Haiyan Gao, Baode Sun



PII: S1044-5803(17)33255-2
DOI: <https://doi.org/10.1016/j.matchar.2018.01.048>
Reference: MTL 9036
To appear in: *Materials Characterization*
Received date: 20 November 2017
Revised date: 25 January 2018
Accepted date: 31 January 2018

Please cite this article as: Yahui Liu, Jun Wang, Maodong Kang, Feifei Mao, Jianzhong Li, Guoxiang Wang, Shuxian He, Haiyan Gao, Baode Sun , Microstructure evolution and mechanical performance of nickel based superalloy C1023 at elevated temperatures. The address for the corresponding author was captured as affiliation for all authors. Please check if appropriate. Mtl(2017), <https://doi.org/10.1016/j.matchar.2018.01.048>

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.

**Microstructure evolution and mechanical performance of nickel based superalloy C1023
at elevated temperatures**

Yahui Liu ^a, Jun Wang ^{a, b, c, *}, Maodong Kang ^{a, *}, Feifei Mao ^a, Jianzhong Li ^a, Guoxiang

Wang ^a, Shuxian He ^a, Haiyan Gao ^a, Baode Sun ^{a, b, c}

- a. School of Materials Science and Engineering, Shanghai Jiao Tong University, No. 800, Dongchuan Road, Shanghai 200240, China
- b. Institute of Solidification Science and Technology, Shanghai Jiao Tong University, No. 800, Dongchuan Road, Shanghai 200240, China
- c. Shanghai Key Laboratory of Advanced High-temperature Materials and Precision Forming, Shanghai Jiao Tong University, No. 800, Dongchuan Road, Shanghai 200240, China

* Corresponding author. e-mail: junwang@sjtu.edu.cn (Jun Wang), kangmd518@sjtu.edu.cn (Maodong Kang).

Abstract

Microstructure evolution of polycrystalline nickel based superalloy C1023 casting was investigated by comparing as cast superalloy and heat treated superalloy in the paper. Influences of strengtheners and carbides on the tensile behaviors of heat treated superalloy at different temperatures (20 °C, 650 °C, and 850 °C) were studied. Resulting data from deep corrosion suggested that growth mode of scripted carbide included nucleation on the vertex of blocky carbonitride, expansion of dendrite arm in C-rich area, and enlargement of dendrite cap. Decomposition of MC carbide generated numerous octahedral $M_{23}C_6$ carbide as well as nanoscale Cr-Mo-rich nuclei. Diffusion of Mo from γ to precipitates such as γ' , MC, and

Download English Version:

<https://daneshyari.com/en/article/7969339>

Download Persian Version:

<https://daneshyari.com/article/7969339>

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