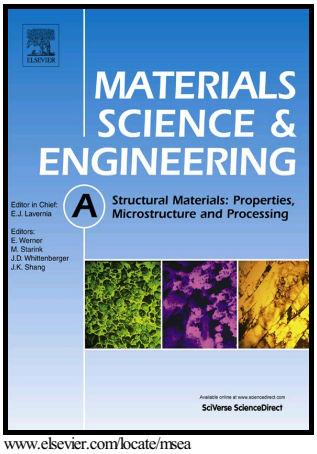
Deformation mechanism during high-temperature tensile test in an eutectic high-entropy alloy $AlCoCrFeNi_{2.1}$

Yaoli Zhang, Xinguang Wang, Jinguo Li, Yaqi Huang, Yiping Lu, Xiaofeng Sun



www.elsevier.com/locate/msea

PII: S0921-5093(18)30436-2
DOI: https://doi.org/10.1016/j.msea.2018.03.078
Reference: MSA36271

To appear in: *Materials Science & Engineering A*

Received date: 15 January 2018
Revised date: 18 March 2018
Accepted date: 19 March 2018

Cite this article as: Yaoli Zhang, Xinguang Wang, Jinguo Li, Yaqi Huang, Yiping Lu and Xiaofeng Sun, Deformation mechanism during high-temperature tensile test in an eutectic high-entropy alloy $AlCoCrFeNi_{2.1}$, *Materials Science & Engineering A,* https://doi.org/10.1016/j.msea.2018.03.078

Deformation mechanism during high-temperature tensile test in an eutectic high-entropy alloy $AlCoCrFeNi_{2.1}$

Yaoli.Zhang[ab], Xinguang.Wang[a*], Jinguo.Li[a*], Yaqi. Huang[ab],Yiping. Lu[c], Xiaofeng. Sun[a]

[a]Institute of Metal Research, Chinese Academy of Sciences, Shenyang110016, China

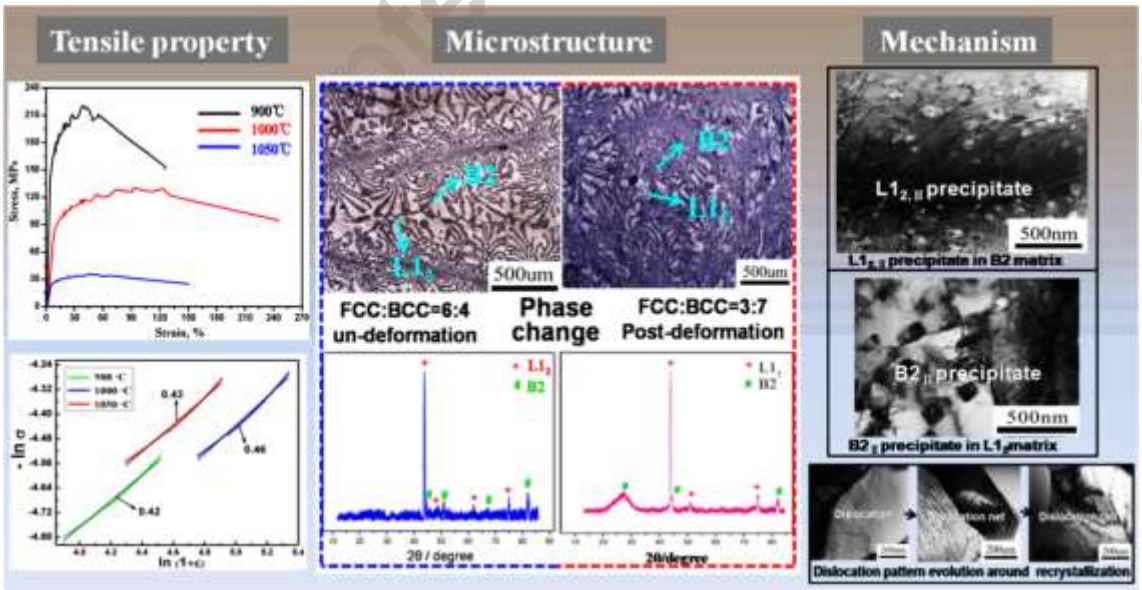
[b]School of Materials Science and Engineering, University of Science and Technology of China, Hefei 230026, China

[c]School of Materials Science and Engineering, Dalian University of Technology, Dalian 116024,China

Highlights

- The eutectic high-entropy alloy possesses double-superlattice phases and exhibits ultra high ductility at elevated temperature.
- Two types precipitates: One is the $L1_{2,II}$ precipitates in BCC matrix, the other is the $B2_{II}$ precipitates in FCC matrix and $B2_{II}$ precipitates have a priority in the precipitation order. Both of the two precipitates hinder dislocation motion.
- The dynamic recrystallization takes place in the FCC matrix and it plays a softening role in the deformation process.

Graphical Abstracts



*Corresponding author. Tel: 86-024-83970809, E-mail address: xgwang11b@imr.ac.cn
Corresponding author. Tel: 86-024-83978872, E-mail address: jgli@imr.ac.cn