# Article information:

Effects of lattice distortion and chemical short-range order on the mechanisms of deformation in medium entropy alloy CoCrNi - ScienceDirect
<https://www.sciencedirect.com/science/article/pii/S1359645420306492?via%3Dihub>

# Article summary:

1. This article investigates the role of lattice distortion (LD) and chemical short-range order (CSRO) in the nucleation and evolution of dislocations and nanotwins with straining in single crystal and nanocrystalline CoCrNi, a medium entropy alloy (MEA).

2. Yield strengths are determined by the strain to nucleate Shockley partial dislocations, and LD lowers this strain, while higher degrees of CSRO increase it.

3. After yield, nanotwin nucleation occurs via reactions of mobile Shockley partials and is promoted in MEAs due to enhanced glide resistance resulting from LD and CSRO.

# Article rating:

May be slightly imbalanced: The article presents the information in a generally reliable way, but there are minor points of consideration that could be explored further or claims that are not fully backed by appropriate evidence. Some perspectives may also be omitted, and you are encouraged to use the research topics section to explore the topic further.

# Article analysis:

This article provides an in-depth analysis of the effects of lattice distortion (LD) and chemical short-range order (CSRO) on the mechanisms of deformation in medium entropy alloy CoCrNi. The authors use a combination of large-scale molecular dynamics (MD), a hybrid MD and Monte-Carlo simulation method, and crystal defect analysis to investigate these effects. The authors provide evidence for their claims through comparison with responses from a hypothetical pure A-atom alloy which bears the same bulk properties as the nominal MEA but no LD or CSRO.

The article is generally reliable as it provides evidence for its claims through comparison with responses from a hypothetical pure A-atom alloy which bears the same bulk properties as the nominal MEA but no LD or CSRO. Furthermore, it uses established methods such as molecular dynamics simulations to support its findings. However, there are some potential biases that should be noted when considering this article's trustworthiness. For example, there is no discussion about possible risks associated with using MD simulations or any other potential limitations that could affect the accuracy of their results. Additionally, there is no mention of any counterarguments or alternative explanations for their findings which could have provided further insight into their conclusions. Finally, there is also some promotional content present throughout the article which could be seen as biased towards certain conclusions or interpretations of their results.

# Topics for further research:

* Molecular Dynamics Simulation Limitations
* Crystal Defect Analysis
* Medium Entropy Alloy Properties
* Chemical Short-Range Order Effects
* Lattice Distortion Mechanisms
* Alternative Explanations for MEA Deformation

# Report location:

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