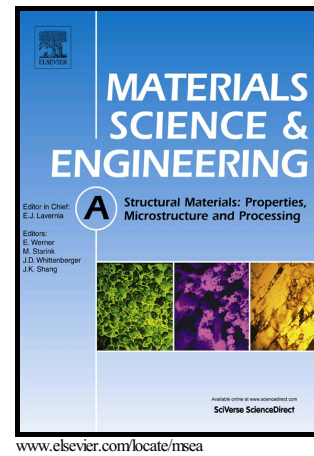


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## The influence of chemical heterogeneities on the local mechanical behavior of a high-entropy alloy: a micropillar compression study

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### Abstract

The effect of the chemical inhomogeneities on the local mechanical behavior was studied in a CoCrFeMnNi high-entropy alloy. Micropillar compression revealed that, despite the difference in the chemical composition, the stress-strain behaviors in the two regions were almost identical. The size effect was negligible in the micropillar compression experiments.

**Keywords:** High-entropy alloy; Chemical heterogeneity; Micropillar compression; Flow stress

### 1. Introduction

High-entropy alloys (HEAs) are in the focus of materials science due to their outstanding properties, such as high strength [1]. HEAs are composed of four or more metallic elements with equal or nearly equal fractions [2]. HEAs have attractive properties for engineering applications such as high hardness, wear resistance, high-temperature softening resistance and oxidation resistance [2,3]. Bulk HEA materials are usually solidified from melts. During the nucleation process, the chemical compositions of the crystalline nuclei and the remaining molten material are different. These chemical heterogeneities may remain in the solidified

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