# Article information:

High‐Entropy Oxides: Fundamental Aspects and Electrochemical Properties - Sarkar - 2019 - Advanced Materials - Wiley Online Library  
<https://onlinelibrary.wiley.com/doi/full/10.1002/adma.201806236>

# Article summary:

1. High-entropy oxides (HEOs) are a new class of materials with tailorable properties, formed by incorporating five different cations into a single-phase oxide system.

2. The formation of HEOs is driven by configurational entropy, which can be maximized when all elements are present in equiatomic fractions.

3. Structural features of HEOs have been studied, including the random distribution of cations in the crystal lattice and reversible phase transformation as an indication of entropy stabilization effect.

# Article rating:

Appears well balanced: The article presents the information in a reliable and balanced way, without biases and prejudices. The claims made in the article are well supported and, where applicable, all sides of the argument are given opportunity to present their point of view. The article appears trustworthy and reliable.

# Article analysis:

The article provides a comprehensive overview of high-entropy oxides (HEOs), discussing their fundamental aspects and electrochemical properties. The article is well-structured and easy to follow, providing clear explanations for each concept discussed. The author has provided evidence to support their claims, such as XRD patterns, HR-TEM images, SAED patterns, STEM images and elemental distribution maps to demonstrate the homogeneity of HEOs on the nanometer length scale. Additionally, calorimetry data is used to illustrate the reversible phase transformation upon cyclic heat treatment as an indication of entropy stabilization effect.

The article does not appear to be biased or one-sided in its reporting; it presents both sides equally and explores counterarguments where necessary. Furthermore, there is no promotional content or partiality evident in the article; instead it provides an objective overview of HEOs from a scientific perspective. Possible risks associated with HEOs are noted throughout the article; for example, it mentions that at room temperature many these systems must be considered metastable due to enthalpy-dominated phase separation being a common scenario in most complex multinary systems.

In conclusion, this article appears to be reliable and trustworthy; it provides evidence for its claims and presents both sides equally without any bias or promotional content.

# Topics for further research:

* High-entropy oxide synthesis
* High-entropy oxide applications
* High-entropy oxide stability
* High-entropy oxide thermodynamics
* High-entropy oxide phase diagrams
* High-entropy oxide electrochemical properties

# Report location:

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