Department of Materials Science and Engineering,

PhD Candidacy Examination

The Thirteenth of September 2022 at 3 pm
in Bossone Research Center room # 302

Lattice Distortion in High-Entropy Alloys

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Abstract

High-entropy alloys (HEAs) are an emerging class of metallic materials consisting of 5 or more principal elements drawing considerable attention as potential high-temperature structural materials. A key feature of HEAs is severe distortion of the crystal lattice structure resulting from the multi-component chemistry. Lattice distortion is speculated to influence myriad properties of HEAs such as enhanced solid solution strengthening, phase stability, defect diffusivity, electrical conductivity, and thermal conductivity. An understanding of the origins and effects of lattice distortion in HEAs is therefore essential to unlocking the full potential of this exciting class of materials. A review of existing literature on HEAs will be presented with a focus on characterization and modeling of lattice distortion as well as the relationship between lattice distortion and properties. Challenges and future avenues for research will also be discussed.