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Strain Modeling for the Mg-Ca and Mg-Y Binary Systems CHRISTOPHER VARNEY, GUS HART, Northern Arizona University — The effort to reduce the weight of automobiles through materials substitution has increased interest in magnesium alloys due to magnesium's high strength-to-weight ratio. Developing improved alloys requires a better understanding of the basic science of magnesium alloys, which is relatively unknown. Encouraged by the success of cluster expansion methods for large-scale modeling of cubic alloys, we are developing a mixed-space cluster expansion approach for hexagonal alloys. Here we discuss an explicit strain model, an essential component of cluster expansion models for modeling precipitate formation. We illustrate the method for magnesium alloys containing yttrium and calcium, two common additives in magnesium alloys.

Prefer Oral Session
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