

Abstract Submitted
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Combined Experimental and Theoretical Studies of Core-Shell Nanostructures in Al-Sc-Li Alloys COLIN OPHUS, ABHAY GAUTAM, Lawrence Berkeley National Lab, EMMANUELLE MARQUIS, University of Michigan, VELIMIR RADMILOVICH, ULRICH DAHMEN, Lawrence Berkeley National Lab, MARK ASTA, University of California, Berkeley — We have used two aging treatments of Al-Li-Sc alloys to create highly monodisperse, coherent $L1_2$ structure core-shell precipitates. We perform detailed analyses of the compositional distributions in the precipitate structures with electron microscopy and atom probe tomography. By combining this information with first principles calculations and Monte Carlo simulations based on the cluster expansion formalism, we compute bulk and interfacial thermodynamic properties relevant to precipitate formation. We specifically focus on understanding how the presence of Li modifies the nucleation rate relative to that of pure Al_3Sc precipitates.

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