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## Critical Properties of Aluminum

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### Abstract

Gibbs ensemble Monte Carlo calculations are performed using a validated embedded atom potential to obtain the vapor-liquid coexistence curve for elemental aluminum in good agreement with available experimental data up to to the boiling point. These calculations are then extended to make a reliable prediction of the critical temperature, pressure, and density of Al, which have previously been known only with very large uncertainties. This demonstrates the ability of modern simulations to predict fundamental physical properties that are extremely difficult to measure directly.

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