

A Equation of State to Analyze the Solid-Liquid Transition of a Simple Fluid

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The equation of state is constructed with a cubic equation (which is well defined for a simple fluid) plus a high-order term on the molar concentration. The parameters of the additional term are determined from the experimental data of the fluid on the melting curve and the triple point. Finally, solid-liquid transition is analyzed, and the existence of a critical point in solid-liquid transition is also discussed.