

Abstract Submitted  
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**Liquid-vapor equilibrium-states and critical properties of aluminum from dense plasma equation-of-state** MOFREH ZAGHLOUL, Dept. of Physics, United Arab Emirates University — We present successful estimates of the critical properties and liquid-vapor equilibrium states of pure aluminum fluid as predicted from a chemical model for the equation-of-state of hot dense partially ionized plasma. The essential features of strongly-coupled plasma of metal vapors, such as, multiple ionization, Coulomb interactions among charged particles, partial degeneracy, and intensive short range hard core repulsion are taken into consideration. Internal partition functions of neutral, excited, and ionized species are thoughtfully evaluated in a statistical-mechanically consistent way implementing recent developments in the literature. Results predicted from the present model are discussed and carefully examined against available data and predictions in the literature.

Mofreh Zaghoul  
Dept. of Physics, United Arab Emirates University

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