

Chemical Potential and Special Relativity

Marko Popovic^{C, S}

University of Belgrade, Faculty of Chemistry, Belgrade, Serbia
popovic.pasa@gmail.com

The subject of this research is the behavior of a two-phase one-component thermodynamic system under relativistic conditions. Chemical potential is one of the most important thermodynamic properties. It is shown that the chemical potential of the substance for the described system in the liquid and gaseous phase is Lorentz invariant. From this it is concluded that the Gibbs energy of such a system is also Lorentz invariant. Based on the Lorentz invariance of the Gibbs energy and chemical potential, it is possible to make conclusions about the spontaneity of chemical reactions under relativistic conditions. This also means that special relativity has no effect on phase equilibria, at least for gaseous-liquid equilibria.