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**A Pseudopotential Approach to Compute Thermodynamic Properties of Liquid Semiconductors** ANAND PRAJAPATI, PANKAJ THAKOR, Department of Physics, Veer Narmad South Gujarat University, Surat 395 007, Gujarat, India, YOGESH SONVANE, Department of Applied Physics, S. V. National Institute of Technology, Surat 395 007, Gujarat, India — This paper deals with the theoretical approach for calculating the thermodynamical properties viz. Enthalpy(E),Entropy(S) and Helmholtz free energy(F) of some liquid semiconductors (Si, Ga, Ge, In, Sn, Tl, Bi, As, Se, Te and Sb). The Gibbs-Bogoliubov(GB) variational method is applied to compute the thermodynamical properties. Our well established model potential is used to define the electron-ion interaction. Charged Hard Sphere (CHS) reference system is used to describe the structural contribution to the Helmholtz free energy in the liquid phase. Local field correction function proposed by Farid *et al* is adopted to see the screening effect. Lastly, our newly constructed model potential is an effective one to produce the data of thermodynamical properties of some liquid semiconductor.

Anand Prajapati
Dept of Physics, Veer Narmad South Gujarat University,
Surat 395 007, Gujarat

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