

**DETERMINE MORSE POTENTIAL, THERMAL EXPANSION COEFFICIENT AND
DESCRIBE ASYMMETRICAL COMPONENTS THROUGH DEBYE-WALLER
FACTOR BY ANHARMONIC CORRELATED EINSTEIN MODEL**

Assoc. Prof. Nguyen Ba Duc PhD.
TanTrao University, TuyenQuang Pro.
VIET NAM

ABSTRACT

Effective potential in anharmonic correlated Einstein model had determined on to base analytics calculation Morse potential between absorber and backscatter atoms with nearest neighbor atoms, this work was represented the expression of thermal expansion coefficient at high temperatures and expressions describe asymmetry components (The first cumulants or thermal expansion coefficient, the second cumulant or mean square relative displacement or Debye-Waller factor, the third cumulant and the fourth cumulant characterize for asymmetry properties of potential) and thermodynamic quantities through Debye-Waller factor. Expressions of correlative function between the cumulants and between cumulants and thermal expansion coefficient for cubic structural crystals also was determined. The expressions had obtained inclusion the classical theory at high temperature and quantum effects at low temperature.

Keyword: Anharmonic; correlate; thermodynamic; asymmetry; cumulant.