Pemodelan paduan half-heusler nimnsb dengan pendekatan tight-binding = Modeling of nimnsb half heusler compound within tight binding approximation

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Abstrak

ABSTRAK
Kami mengkaji paduan Half-Heusler NiMnSb dalam struktur kristal C1b dari aspek teori kemagnetannya. Kami melakukan perhitungan numerik pada sistem ini dengan metode Hamiltonian suku kinetik pendekatan tight-binding dan interaksi berbasis mean-field theory. Dari hasil perhitungan, sistem paduan NiMnSb menunjukkan karakter metal pada saat U J < 2.5 eV dan karakter semi metal pada U J ge; 2.5 eV. Menariknya, pada U=2.5 eV dan J=0.9 eV diperoleh moment magnet asymp; yang mana ini sesuai dengan prediksi Slater-Pauling.Kata kunci : Paduan Half-Heusler, Moment Magnet, Tight-Binding
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ABSTRACT
We study a Half Heusler alloy of NiMnSb in C1b crystal structure for magnetic theoretical aspect. We have done numerical calculation of the NiMnSb compound system using the model Hamiltonian kinetic term within tight binding approximation and the interaction based on mean field theory. From computational output, the NiMnSb compound system exhibit metal phase by the time U J 2.5 eV and half metal phase in U J ge 2.5 eV. Interestingly, the moment magnet results of U 2.5 eV J 0.9 eV is asymp which is agree with Slater Pauling prediction.Key words Half Heusler Alloy, Magnetic Moment, Tight Binding