World Academy of Science, Engineering and Technology
International Journal of Materials and Metallurgical Engineering
Vol:9, No:06, 2015

Thermodynamic Study of Homo-Pairs in Molten Cd-Me, (Me=Ga,in) Binary Systems

Authors : Yisau Adelaja Odusote, Olakanmi Felix Akinto

Abstract : The associative tendency between like atoms in molten Cd-Ga and Cd-In alloy systems has been studied by using the Quasi-Chemical Approximation Model (QCAM). The concentration dependence of the microscopic functions (the concentration-concentration fluctuations in the long-wavelength limits, Scc(0), the chemical short-range order (CSRO) parameter α1 as well as the chemical diffusion) and the mixing properties as the free energy of mixing, GM, enthalpy of mixing and entropy of mixing of the two molten alloys have been determined. Thermodynamic properties of both systems deviate positively from Raoult's law, while the systems are characterized by positive interaction energy. The role of atomic size ratio on the alloying properties was discussed.

Keywords : homo-pairs, interchange energy, enthalpy, entropy, Cd-Ga, Cd-In
Conference Title : ICMSAPC 2015 : International Conference on Materials Science, Applied Physics and Chemistry
Conference Location : London, United Kingdom
Conference Dates : June 28-29, 2015