

Komitet za termodinamiku i fazne dijagrame Srbije

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JEDANAESTI SIMPOZIJUM O TERMODINAMICI I FAZNIM DIJAGRAMIMA

sa međunarodnim učešćem



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Jedanaesti simpozijum o termodinamici i faznim dijagramima

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Electrical properties, Scheil and Lever simulation of the alloys from ternary Cu-Ge-In system

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Abstract

In this paper, electrical properties and Scheil and Lever simulation of the alloys from ternary Cu-Ge-In system have been tested. Selected system is due to their good thermal and electrical conductivity [1]. Systems containing some of these elements have also been previously examined [3]. In this paper, the focus is given to systems based on copper and germanium, which are of great interest nowadays. Used experimental techniques is electrical conductivity test. The ternary Cu-Ge-In system has been previously investigated by our group [4]. In the ternary Cu-Ge-In system, three vertical sections (Cu-GeIn, Ge-CuIn and In-CuGe) and two isothermal sections at 200 and 300 °C were tested. By using experimental results of the electrical conductivity and an appropriate mathematical model, those properties were predicted along all composition range. In general, it can be concluded that the content of germanium and indium not play an important role influences strongly on the electrical conductivity. For electrical conductivity value can be concluded that alloying element copper play an important role.

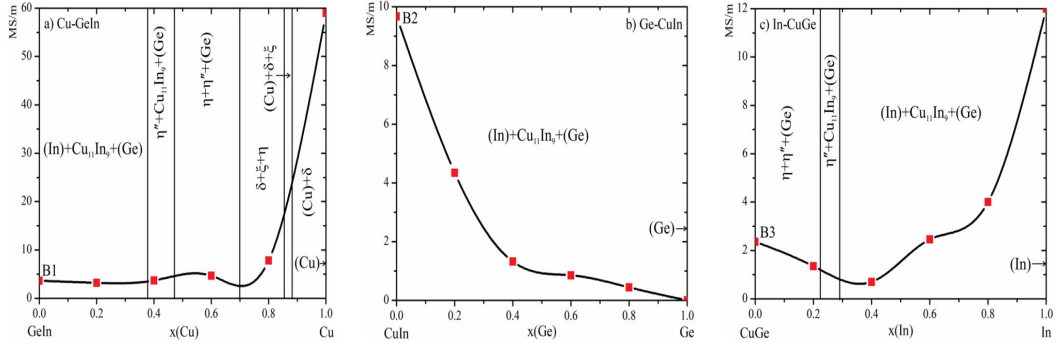
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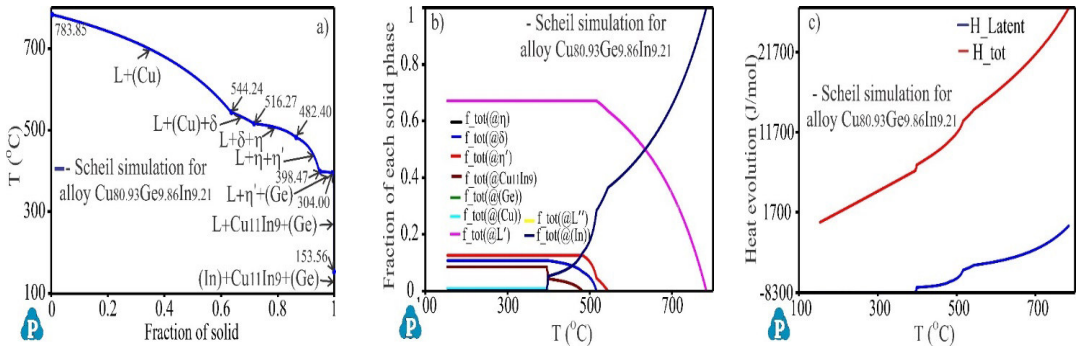
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3. M. Milosavljevic, M. Premovic, D. Minic, D. Manasijevic, A. Djordjevic, M. Tomovic, *Journal of Phase Equilibria and Diffusion*, 42 (2021) 851-863.

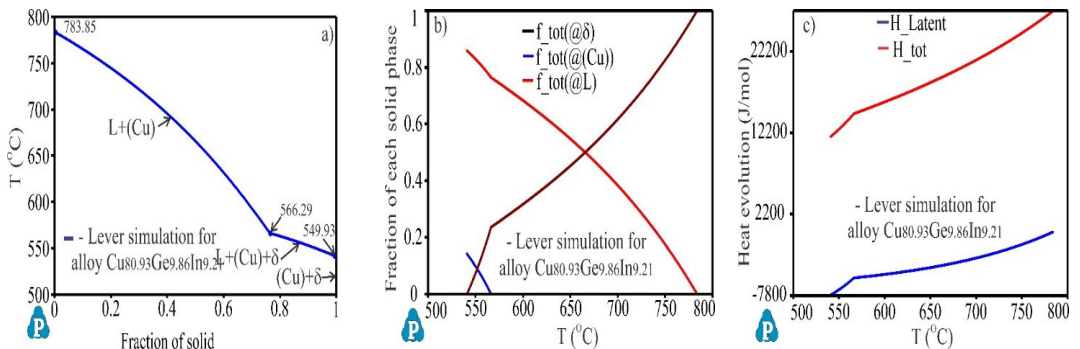
Graphical abstract:



Graphical presentation of electrical conductivity dependence of composition and phase fraction a) vertical section Cu-GeIn, b) vertical section Ge-CuIn and c) vertical section In-CuGe.



Scheil simulation for sample 4, alloy $\text{Cu}_{80.93}\text{Ge}_{9.86}\text{In}_{9.21}$: a) fraction of solid, b) fraction of each solid phase and c) heat evolution latent and total.



Lever simulation for sample 4, alloy $\text{Cu}_{80.93}\text{Ge}_{9.86}\text{In}_{9.21}$: a) fraction of solid, b) fraction of each solid phase and c) heat evolution latent and total.