Liquid copper, bismuth, and eleven bismuth-copper alloys were investigated at temperatures above the liquidus with X-ray diffraction. The experimental procedure was adjusted to reduce the effects of evaporation. The Faber-Ziman total structure factors $S(Q)$ feature a splitting of the first maximum and negative values for $Q$ around 1 Å$^{-1}$ in a large concentration range. The results are compared to previous neutron diffraction results by Zaiss and Steeb, to square-well potential model calculations by Gopala Rao and Satpathy and to a simple segregation model. The segregation model reproduces the features qualitatively. Partial structure factors are assessed by fitting both neutron and X-ray scattering results with reverse Monte-Carlo simulation.

Key words: Bismuth; Copper; Liquid Alloys; X-ray Diffraction; Microsegregation.