and satisfy x\text{m} point symmetry, the superstructure was assumed to have the highest possible symmetry for convenience of crystallographic calculations. The actual structure was examined as a superstructure having a face-centered cubic lattice with a lattice constant of \(a = 13.4a_{\text{0}}\).

Through analysis of the partial Patterson function, the superstructure was found to be basically defined by clusters of Bi end of Cu. These two kinds of metal clusters occur alternately and are arranged in a face-centered cubic lattice mode. Such local clustering of the atoms is interpreted to be a combination of two different kinds of modulation factors: the periodic substitution between Bi and Cu and the periodic positional displacement of the atoms. Structure factor calculations, based on the clustering structure, gave substantial agreement with observed intensities.

The problems of the clustering structure can be attributed to the process of cooling from high temperature. This cubic phase and CuB_{\text{1/2}}C_{\text{1/2}}, which also has a non-integral type superstructure (Ohmsa, Tomoe, \& Sadanaga, 1979, AIP Conf. Proc., 53, 355), are stable only at temperature higher than 400°C and metastable at room temperature. In their stable high temperature phase, the crystals exist with random replacements between Bi and Cu and have structures approximating the substructures as defined in our studies (Ohmsa, 1973, Neues Jahrb. Minn. Monatsh., 227; Tomoe, Ohm\& Sadanaga, 1980, Mineralogical Journ., 10, 57.) During quenching, however, the metal atoms aggregate into two kinds of clusters. The long-range repeat distances are directly influenced by these metal clusters and seem to be independent of the period of the subcell.