Supplementary information:

For X-ray powder diffraction a Huber imaging plate system equipped with a monochromator (CuKα1-radiation) was used. Detailed evaluation of the powder patterns was performed via Rietveld refinements employing the FullProf program [Roisnel T, Rodriguez-Carvajal, J. Mater Sci Forum (2001) 118, pp. 378-381].

Fig. S1: Rietveld refinement of the sample Ba$_8$Zn$_{7.54}$Ge$_{37.80}$Sn$_{0.66}$. A minor content of less than 1 weight% Sn is detected.
Fig. S2: X-ray powder diffraction patterns of all samples of series 1 (see Table I in the publication). The asterisk marks the (111)-reflection of Ge.
Fig. S3: X-ray powder diffraction patterns of all samples of series 2 (see Table I in the publication).