

illustrating that the present unit cell volume of the A-type is probably the smallest unit cell volume possible for this structure type, whereas that of the U₂S₃ phase, is one of the largest of its type. However, the U₂S₃ phase is probably more compressible at higher pressures. These factors indicate that for the present compound GdYbS₃, we have a critical relationship between the sizes of the Gd and Yb which makes it possible to obtain both structure types for the same compound. The average radius of the cations Gd and Yb is 0.898 Å, which lies between the cationic radii of Ho and Y⁴. Preliminary

experimental results on the compounds Ho₂S₃ and Y₂S₃ at low pressures and high temperatures indicate that the A-type structure may also occur for these compounds.

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