





# Synthesis and characterization of Pt(Cu<sub>0.67</sub>Sn<sub>0.33</sub>)

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## Highlights

- Successful synthesis of the first Pt–Cu–Sn ternary compound.
- Extensive characterization by X-ray diffraction, DSC, SEM and thermal relaxation calorimetry.
- Unusually low formation temperature of 773 K.
- Complex microstructures which depend on thermal history.

## Abstract

Pt(Cu<sub>0.67</sub>Sn<sub>0.33</sub>) has recently been found in a natural sample. In order to be able to characterize this new ternary compound, we synthesized it from the elements. Samples were characterized by powder diffraction, differential scanning calorimetry, thermal relaxation calorimetry, and scanning electron microscopy studies. Density functional theory-based model calculations complemented the experimental studies. Pt(Cu<sub>0.67</sub>Sn<sub>0.33</sub>) was already formed at a relatively low temperature of 773 K. Rietveld refinement of Pt(Cu<sub>0.67</sub>Sn<sub>0.33</sub>) has been carried out in CuAu-type or L1<sub>0</sub>-type structure,

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