

Abstract:

This thesis is focused on preparation and characterisation of CePd_2Al_2 , which is an intermetallic, incongruently melting compound. Due to its incongruent nature a number of polycrystalline samples was made to find an ideal nominal stoichiometry for a precursor for Czochralski growth of a single crystalline sample. Seven polycrystalline samples of different nominal stoichiometries were prepared in mono-arc furnace and studied via electron microscopy, differential scanning calorimetry and four of the samples also by powder diffraction. The result of analyses showed a presence of a hexagonal phase of stoichiometry 16.6:33.3:50 in multiple of the samples. This phase crystallizes at temperature higher than the rest of the present phases. The hexagonal phase was found to not occur in four of polycrystalline as-cast samples, namely of stoichiometries 22:40.7:37.3, 22:41.1:36.9, 22:41.5:36.5 and 22:42.5:35.5 atomic percent. The most suitable stoichiometry of the precursor for Czochralski growth of single crystalline sample in tri-arc furnace was found to be stoichiometry 22:41.1:36.9.