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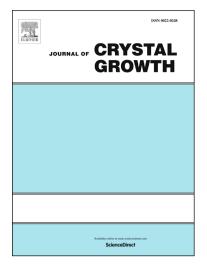
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ACCEPTED MANUSCRIPT

Solid state single crystal growth of three-dimensional faceted LaFeAsO crystals

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Abstract

Solid state single crystal growth (SSCG) is a crystal growth technique where crystals are grown from a polycrystalline matrix. Here, we present single crystals of the iron pnictide LaFeAsO grown via SSCG using NaAs as a liquid phase to aid crystallization. The size of the as grown crystals are up to 2 x $3 \times 0.4 \text{ mm}^3$. Typical for this method, but very uncommon for crystals of the pnictide superconductors and especially for the oxypnictides, the crystals show pronounced facets caused by considerable growth in c direction. The crystals were characterized regarding their composition, structure, magnetic, and thermodynamic properties. This sets the stage for further measurements for which single crystals are crucial such as any c axis and reciprocal space dependent measurements.

Keywords:

A1. X-ray diffraction, A2. Single crystal growth, B1. Inorganic compounds, B2. Oxide superconducting materials

1. Introduction

Solid state single crystal growth (SSCG) has been used to synthesize ceramic materials such as BaTiO₃ [1] as well as metallic materials [2]. This

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