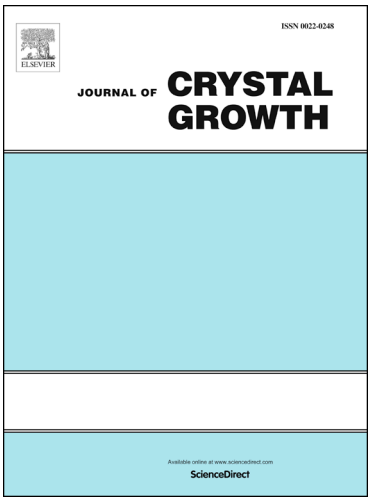

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Solid state single crystal growth of three-dimensional faceted LaFeAsO crystals

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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 x 0.4 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 $BaTiO_3$ [1] as well as metallic materials [2]. This

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