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Nucleation kinetics, crystal growth and optical studies on lithium hydrogen oxalate monohydrate single crystal

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Abstract

Semi-organic lithium hydrogen oxalate monohydrate non-linear optical single crystals have been grown by slow evaporation solution technique at 40° C. The nucleation parameters such as critical radius, interfacial tension, and critical free energy change have been evaluated using the experimental data. The solubility and the nucleation curve of the crystal at different temperatures have been analyzed. The crystal has a positive temperature coefficient of solubility. The metastable zone width and induction period have been determined for the aqueous solution growth of lithium hydrogen oxalate monohydrate. The UV-Vis-NIR spectrum showed this crystal has high transparency. The photoconductivity studies indicate lithium hydrogen oxalate monohydrate has positive photoconductivity behaviour. The low etch pit density observed on (0 0 1) crystal surface and the high resolution x-ray diffraction analysis indicate the good quality of the grown crystals

Keywords: A1. Etching; A1. Nucleation; A1. Solubility; A2.Growth from solutions.

1. Introduction

In the recent development of the research, nonlinear optical (NLO) crystals have been paid more attention for technological application and they play an important role in the fields of

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