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Concentration and composition of gas inclusions in some oxide crystals

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## Abstract

A method of concentration of gas impurities contained in a melt into sealed cavities in a crystal has been proposed for the first time. This makes it possible to determine the amount of gases dissolved in the melt during crystallization by the Edge-defined Film-fed Growth (EGF) technique and the gas pressure in cavities inside the crystals. We also measure the composition of gas inclusions in crystallized melts of  $\text{Al}_2\text{O}_3$ ,  $\text{Y}_3\text{Al}_5\text{O}_{12}$  and  $\text{Bi}_4\text{Ge}_3\text{O}_{12}$  and discuss it in connection with crystal growth procedure and quality of crystals.

Keywords: A1. Segregation, A1. Volume defects, A2. Growth from melt, B1. Oxides, B2. Dielectric materials.

## 1. Introduction

The majority of crystals grown from the melt contain macrodefects comprising gas inclusions or residual micropores. Following the growth technique used, their quantity and distribution over the crystal may vary. The size of visible inclusions ranges from microns to millimeters, and their

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