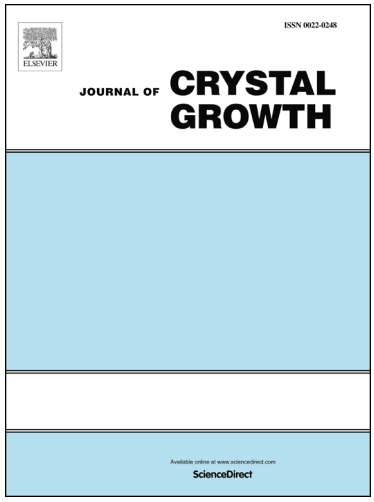

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PII: S0022-0248(17)30184-7
DOI: http://dx.doi.org/10.1016/j.jcrysgro.2017.03.026
Reference: CRYS 24101

To appear in: *Journal of Crystal Growth*

Received Date: 25 October 2016
Accepted Date: 17 March 2017

Please cite this article as: T. Kovačević, V. Wiedmeyer, J. Schock, A. Voigt, F. Pfeiffer, K. Sundmacher, H. Briesen, Disorientation Angle Distribution of Primary Particles in Potash Alum Aggregates, *Journal of Crystal Growth* (2017), doi: http://dx.doi.org/10.1016/j.jcrysgro.2017.03.026

Disorientation Angle Distribution of Primary Particles in Potash Alum Aggregates

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Abstract

In order to fully characterize crystal aggregates, the orientation of primary particles has to be analyzed. A procedure for extracting this information from three-dimensional microcomputed tomography (μCT) images was recently published by our group. We here extend this method for asymmetrical crystals and apply it for studying the disorientation angle distribution of four potash alum crystal samples that were obtained under various experimental conditions. The results show that for all considered supersaturation profiles, primary particle pairs tend to have the same orientation significantly more often than in theoretical considerations, in which the orientations of primary particles are assumed to be distributed randomly.

Keywords: A1. Aggregation, A1. Characterization, A1. Microcomputed Tomography, A1. Crystal Morphology, B1. Salts

1. Introduction

Aggregation is an important phenomenon in crystallization and can lead to broadening of the particle size distribution, an undesired change in flow properties, and the inclusion of impurities [1][p. 25]. In an agitated vessel, crystals often collide and form an aggregate if they are cemented together quickly enough