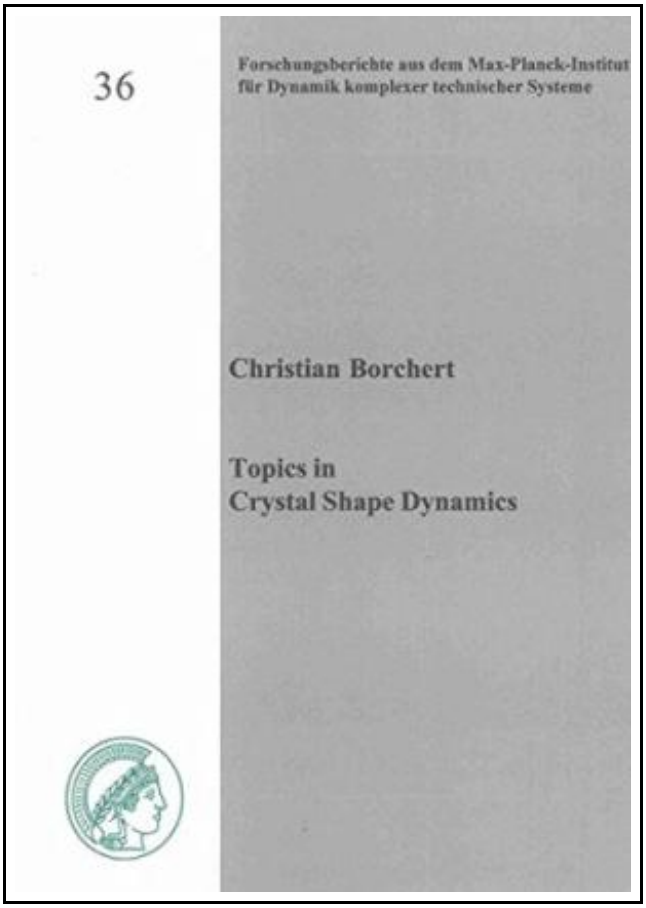
Topics in Crystal Shape Dynamics



Filesize: 6.64 MB

Reviews

Complete guideline for ebook enthusiasts. It really is loaded with knowledge and wisdom Once you begin to read the book, it is extremely difficult to leave it before concluding.
(Delilah Hansen)

TOPICS IN CRYSTAL SHAPE DYNAMICS

To save **Topics in Crystal Shape Dynamics** eBook, you should access the hyperlink beneath and save the document or get access to other information that are have conjunction with TOPICS IN CRYSTAL SHAPE DYNAMICS ebook.

Shaker Verlag Dez 2012, 2012. Buch. Book Condition: Neu. Neuware - The topic of this work is the dynamic modeling and observation of polyhedral, growing crystals. This is motivated by the fact that besides size, shape is an important product property for particulate materials in various industries. Due to the underlying anisotropic molecular crystal structure, growth proceeds at different rates in different directions. Therefore, crystals assume a non-spherical, polyhedral, though, under ideal conditions also a symmetric shape. The work at hand is essentially divided into three major parts. At first, a system-theoretic framework is introduced and applied to describe the evolution of single crystals and of crystal populations. In the second part the extraction of shape information from suspension images is discussed. This data is finally used to determine growth kinetics enabling the description of the conducted experiments with the developed models. It is shown that models decribing the development of a single crystal exhibit hybrid dynamics if the number of faces changes. In order to transfer this property to the population level, the class of systems that can be captured with population balances is widened to hybrid systems. Such systems are capable of performing switches in their velocity field or jumps in their state space. It is pointed out that different crystal morphologies exist in different parts of the state space, the so called morphology cones. On the bounding elements of the morphology cone hybrid dynamics is induced. It turns out that the morphology cones do not cover the whole state space and thus the computational time for the solution of evolution equations is reduced. The shape evolution modeling studies are then augmented by the development of a crystal shape observation scheme. 3D shape descriptors of crystal populations cannot be measured directly with current devices. Therefore, an image processing...

See Also