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Book Review

Crystal Growth Technology

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This book contains 29 selected review articles from the "First International School on Crystal Growth Technology", which took place from Sept. 5-14,1998 in Beatenberg, Switzerland. The articles are written by leading specialists of industries and universities in the field of mainly bulk inorganic materials; two papers are devoted to epitaxy and layer deposition. So the title of this book would be better named bulk crystal growth technology instead of crystal growth technology.

Part 1 of this book presents "General Aspects of Crystal Growth (Technology?)" with topics e.g. to thermodynamic fundamentals, facet formation, computational simulations, heat and mass transfer related to hydrodynamics and magnetic fields. However, Chapt.4 of Part I "Theoretical and Experimental Solutions of the Striation Problem" does not mention important awarded results to this subject published by Elisabeth Bauser (see for comparison: E. Bauser in "*Handbook of Crystal Growth*", edited by D. T. J. Hurle, Elsevier, Amsterdam 1994).

Part 2 deals with, "Silicon", a collection of five very interesting papers. Topics here are : formation, control and engineering of defects and crystal growth related to photovoltaics.

Part 3 is devoted to "Compound Semiconductors" and describes various growth methods of III-V single crystals with main consideration for the production of GaAs. As representatives of II-VI compounds, CdTe and (Cd,Zn)Te are described in Chapt. 17 in connection with various growth techniques. In this chapter there should be given more attention to the High Pressure Bridgman Method which is one of the leading technology for the production of these materials. Chapter 4 is focusing on "Oxides and Halides" with presentations dedicated to electrooptical, piezoelectric, and nonlinear-optical applications in connection with representative growth techniques. Growth of Zirconia crystals by Skull- melting technique, the shaped sapphire production and the crystal growth of halogenide scintillators are further topics in this chapter. A part in this book with special emphasis to growth technology is Chapt. 5 "Crystal Machining". The use of single crystals for semiconductor and optical applications or as substrates for epitaxial processes requests a high-precision machining with an exact overall removal of damages. The four topics of this chapter "Advanced Slicing Techniques for Single Crystals", "Methods and Tools for Mechanical Processing of Anisotropic Scintillating Crystals", Plasma Chemical Vaporization Machining" and "Numerically Controlled Elastic Emission Machining System for Ultraprecision Figuring and Smoothing of Aspherical Surfaces" are important highlights in understanding the field of crystal machining as a non-neglecting part of crystal growth technology.

The last Chapter 6 "Epitaxy and Layer Deposition" is an appendix of the workshop with two papers devoted to the control of epitaxial growth modes and the deposition of amorphous Silicon films. These articles are of scientific interest but are not very representative for the huge field of epitaxial crystal growth technology. The major strength of this book is the fact that it presents still an actual overview in the field of fundamentals of crystal growth and crystal growth technology mainly of bulk crystals. I recommend this book for students working in the field of materials sciences related to crystal growth and for scientists and engineers in industry, science institutions and universities.

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