

## THE ACTUALIZED CONTRIBUTOR

**A** PERSON CERTAINLY HAS to have some of the concepts or elements of the actualized person to immediately contribute towards an organization. He must take risks. He must speak up. He must involve himself in a productive way with all the decisions in which he has contact. He has the difficulty of doing this in a way which is acceptable to the people around him. He cannot be overbearing; he makes no points that way. But he cannot be under-aggressive; he again makes no points. So, therefore, the process is one of sensing where the other human being is, being aware of where his managers are and of their capabilities and maybe lack of capabilities.

Therefore, our stance today is that our students can blow the whistle on industry, either internally or externally. But he can do it by being a productive management team, even when we're not so designated. Our responsibility as educators is to set them up, to make them aware that this

is their responsibility. We find it very difficult to preach morals or to teach a definite set of ethics. But we feel that each person should be encouraged to express the set of ethics that he personally has developed. We do hope that our engineers can go out and be actualized people, be non-manipulative, be open. They can express their concern about what the company is doing, about its processes, about the pollution capability, about the discrimination practices that they see, about the quality or lack of quality of their product. These are of direct concern to every technical person who works with a company, and the first step, the most productive step, is one of immediately being interactive.

**"Had I but served my God with the zeal that I have served my king, He would not, in my old age, have left me naked before my enemies!"—William Shakespeare**

## **ChE** book reviews

### **Modeling Crystal Growth Rate from Solution**

*By Makoto Ohara and Robert C. Reid  
Prentice-Hall (1973), 272 pp.*

Reviewed by Maurice Larson, Iowa State U.

This book is a good summary of the most popular theories attempting to describe the mechanism of crystal growth from solution. Of its 272 pages, 134 pages are devoted to appendices. It is printed by photo-offset of the typed manuscript. It is well organized and readable, but many of the illustrations do not have figure numbers nor titles. This leads to some difficulty. The index is adequate but brief.

The seven chapters of the non-appendix portion of the book are devoted to a Synopsis of the text, four chapters describing four growth mechanism concepts, one chapter concerned with impurity effects and a chapter which compares recent experimental data with theory.

The Synopsis summarizes the book well, points out what the purpose of the book is and briefly states the concepts of the various mechanistic models for growth. Chapter 2 discusses the classical surface nucleation theories of growth and shows that they are perhaps quite inadequate to explain observed growth rates. Chapter 3 discusses crystal growth limited by mass transfer,

introduces the Burton, Caberra, Frank bulk diffusion model and treats it in detail. Chapter 4 discusses surface diffusion theories, again calling on the work of Burton, Caberra and Frank. The chapter is quite short leaving the detailed mathematical development for Appendix A which is 68 pages long. The treatment is detailed and lucid. Layer and dislocation growth concepts are adequately treated.

Chapter 5 attempts to account for the appearance of microscopic growth layers and distinguishes them from the layer and dislocation growth theories of Burton, Caberra and Frank. Impurity effects are briefly treated in chapter 6. The treatment reflects the general lack of adequate theories which explain observed phenomena. Finally chapter 7 presents data which can be explained to some degree by the theories presented previously.

The book is largely concerned with the detailed mathematical presentation of existing theories and the correction of some derivation errors found in the literature. In the words of the authors 'the book has solved no *new* (italics mine) problem' but the treatment should be helpful for those wishing to gain an understanding of present thought without extensive literature review. It will be a good reference book for those new to the field and could provide a substantial part of text material for a course in crystallization technology.