Kashchiev

Nucleation

Basic Theory with Applications

Nucleation: Basic Theory with Applications, Second Edition updates the classic, highly cited introductory work by Dimo Kashchiev. It is a detailed and systematic account of the basic principles, developments, and applications of the theory of nucleation. The first two parts of the book describe the two basic approaches in nucleation theory: thermodynamic and kinetic. They contain derivations of the basic and most important formula of the theory and discuss their limitations and possibilities for improvement. The third part deals with some of the factors that can affect nucleation, and is a natural continuation of the first two chapters. The last part is devoted to the application of the theory to processes of practical importance, such as melt crystallization and polymorphic transformation, crystal growth and growth of thin solid films, size distribution of droplets, and crystallites in condensation and crystallization. Included is a new chapter on the formation of gas hydrates. Several appendices have also been added providing important contemporary results in nucleation theory.

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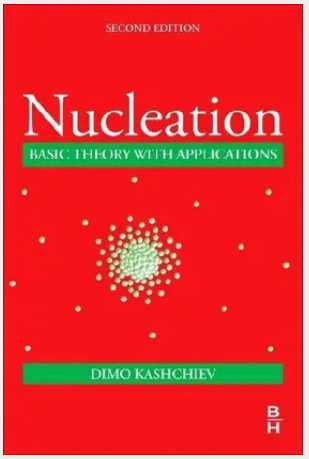

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