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5.4 Application of In Situ Imaging for Monitoring Crystallization Processes 5.4.1 Example 1; 5.4.2 Example 2; 5.5 Conclusions; References; Further Reading; 6 Turbidimetry and Nephelometry; 6.1 Introduction; 6.2 Measurement of Nucleation and Solubility Points; 6.3 The Developed Turbidimetric and Nephelometric Instruments; 6.4 The Examined Systems; 6.5 Obtained Results; References; 7 Speed of Sound; 7.1 Introduction; 7.2 In-Process Ultrasound Measurement; 7.3 Determining Solubility and Metastable Zone Width; 7.4 Measuring Crystal Growth Rates; 7.5 Detecting Phase Transitions with Ultrasound References 8 In-Line Process Refractometer for Concentration Measurement in Sugar Crystallizers; 8.1 Introduction; 8.2 Measurement Principle; 8.3 In-Line Instrument Features and Benefits; 8.3.1 Accuracy; 8.3.2 Concentration Determination; 8.3.3 Process Temperature Compensation Factor; 8.3.4 Process Sensor; 8.4 Features and Benefits; 8.5 Example of Application in the Crystallization; 8.5.1 Seeding Point and Supersaturation Control in Sugar Vacuum Pan; 8.6 Conclusion; References; 9 ATR-FTIR Spectroscopy; 9.1 Introduction; 9.2 Calibration; 9.3 Speciation Monitoring; 9.4 Co-Crystal Formation
9.5 Solubility Measurement

Sommario/riassunto

Crystallization is an important technique for separation and purification of substances as well as for product design in chemical, pharmaceutical and biotechnological process industries. This ready reference and handbook draws on research work and industrial practice of a large group of experts in the various areas of industrial crystallization processes, capturing the essence of current trends, the markets, design tools and technologies in this key field. Along the way, it outlines trouble free production, provides laboratory controls, analyses case studies and discusses new ch