This is one of three books in a collection covering all aspects of distillation. Distillation is the oldest technology available for the separation and purification of liquid mixtures and is a key unit operation within the petroleum refining, chemical, petrochemical, pharmaceutical, food, and alcohol industries.

**Distillation: Operation and Applications** provides an overview on all operational aspects and describes application technologies. The first part describes control and operation principles of columns including coupled and heat integrated columns, explains troubleshooting analysis, and outlines performance testing techniques for industrial scale columns with all types of internals. The following parts describe in detail the different configurations of distillation sequences used in refineries including the choice of column internals, in big scale plants for bulk chemicals with respect to typical performance factors like foaming, wetting, or fouling. In addition, the book describes the special aspects of distillation in smaller scale plants for specialty chemicals that frequently need low pressure conditions and introduces the very special application of air distillation. A further focus is on novel techniques like Higee equipment and microdistillation. The book presents new application fields for distillation in biotechnology, especially with respect to the different demands connected with red, green, and white biotechnology. The last part explains the application fields of new separating agents like ionic liquids and hyperbranched polymers.

**Related Titles**

  
  This book focuses on up-to-date coverage of the fundamental principles of distillation together with practical understanding of design and operation of the essential industrial process. The book outlines the history of distillation, together with an overview of key aspects of vapor-liquid equilibrium and mass transfer. In addition, the book also covers liquid-liquid and gas-liquid distillation as well as the design of distillation equipment, distillation processes, energy considerations, and hybrid processes. Finally, the book outlines the current state-of-the-art of both modeling and of optimization of distillation.

  
  In this book prominent authors from academia and industry discuss topics including types of distillation columns, trays, distillation trays, reboilers, packed columns, distillation trays, structured packing, dividing wall columns, statistical design, distillation design, reactive distillation, reactive distillation, vacuum and high pressure distillation and laboratory distillation and scale-up.