Contents

Foreword to the Second Edition iii
Foreword to the First Edition v
Preface to the Second Edition vii
Preface to the First Edition ix
Contributors xv

VOLUME 1

Part I Fundamental Aspects

1. Drying of Solids: Principles, Classification, and Selection of Dryers 1
   Arun S. Mujumdar and Anilkumar S. Menon

2. Experimental Techniques in Drying 41
   Károly Molnár

3. Basic Process Calculations in Drying 71
   Zdzisław Pakowski and Arun S. Mujumdar

4. Transport Properties in the Drying of Solids 113
   D. Marinos-Kouris and Z. B. Maroulis

Part II Description of Various Dryer Types

5. Rotary Drying 161
   John J. Kelly
6. Horizontal Vacuum Rotary Dryers
   *James G. Moore*

7. Fluidized Bed Drying
   *Svend Hovmand*

8. Drum Dryers
   *James G. Moore*

9. Industrial Spray Drying Systems
   *Iva Filková and Arun S. Mujumdar*

10. Freeze Drying
    *Athanasios I. Liapis and Roberto Bruttini*

11. Microwave and Dielectric Drying
    *Robert F. Schiffmann*

12. Solar Drying
    *László Imre*

13. Spouted Bed Drying
    *Elizabeth Pallai, Tibor Szentmarjay, and Arun S. Mujumdar*

14. Impingement Drying
    *Arun S. Mujumdar and Bing Huang*

15. Flash Drying
    *Bilgin Kisakürek*

16. Conveyor Dryers
    *Lloyd F. Sturgeon*

17. Impinging Stream Dryers
    *Tadeusz Kudra, Arun S. Mujumdar, and Valentin Meltser*

18. Infrared Drying
    *Cristina Ratti and Arun S. Mujumdar*

**Part III  Drying in Various Industrial Sectors**

19. Drying of Foodstuffs
    *Shahab Sokhansanj and Digvir S. Jayas*

20. Drying of Agricultural Products
    *Vijaya G. S. Raghavan*

21. Drying of Fruits and Vegetables
    *K. S. Jayaraman and D. K. Das Gupta*

22. Osmotic Dehydration of Fruits and Vegetables
    *Piotr P. Lewicki and Andrzej Lenart*

23. Evaporation and Spray Drying in the Dairy Industry
    *Jan Písecký*
VOLUME 2

24. Drying of Pharmaceutical Products
   Zdzislaw Pakowski and Arun S. Mujumdar
   743

25. Drying of Biotechnological Products
   Janusz Adamiec, Wladyslaw Kamiński, Adam S. Markowski
   and Czeslaw Strumilo
   775

26. Drying of Peat and Biofuels
   Roland Wimmerstedt
   809

27. Drying of Fibrous Materials
   Roger B. Keey
   825

28. Drying of Pulp and Paper
   Osman Polat and Arun S. Mujumdar
   861

29. Drying of Wood and Wood Products
   Howard N. Rosen
   899

30. Drying in Mineral Processing
    Arun S. Mujumdar
    921

31. Modeling, Measurements, and Efficiencies of Infrared Dryers
    for Paper Drying
    Kari T. Ojala and Markku J. Lampinen
    931

32. Drying of Coal
    Jerzy Pikoń
    977

33. Drying of Coated Webs
    James Y. Hung, Richard J. Wimberger, and Arun S. Mujumdar
    1007

34. Drying of Polymers
    Mainul Hasan and Arun S. Mujumdar
    1039

35. Superheated Steam Drying
    Arun S. Mujumdar
    1071

36. Special Drying Techniques and Novel Dryers
    Tadeusz Kudra and Arun S. Mujumdar
    1087

Part IV  Miscellaneous Topics in Industrial Drying

37. Dryer Feeder Systems
    Rami Y. Jumah and Arun S. Mujumdar
    1151

38. Dryer Emission Control Systems
    Rami Y. Jumah and Arun S. Mujumdar
    1179

    Zbigniew T. Sztabert and Tadeusz Kudra
    1227

40. Energy Aspects in Drying
    Czeslaw Strumilo, Peter L. Jones, and Romuald Żyła
    1241
41. Safety Aspects of Industrial Dryers  
*Adam S. Markowski and Arun S. Mujumdar*  
1277

42. Humidity Measurements  
*Peter Wiederhold*  
1313

43. Control of Industrial Dryers  
*Rami Y. Jumah, Arun S. Mujumdar, and Vijaya G. S. Raghavan*  
1343

Appendix A Enthalpy-Humidity Charts  
*Zdzisław Pakowski*  
1369

Appendix B Drying—An Annotated Bibliography  
*Tadeusz Kudra*  
1385

Appendix C SI Units, Conversions, and Symbols for Drying  
*Carl W. Hall*  
1405

Index  
1417