

TABLE OF CONTENTS

Preface

List of Contributors

CHAPTER 1: MICROPARTICLE PROGRAMS FOR DRAINAGE AND RETENTION

- Introduction
- Types of Microparticles
- Polymers Used with Microparticles
- Mechanistic Aspects of Microparticles Systems

CHAPTER 2: CATIONIC MICROPARTICLES IN PAPERMAKING WET END

- Introduction
- Inorganic Cationic Microparticles in Papermaking
- Polymeric Cationic Microparticles for Papermaking
- Cationic Microparticles as Sizing Agents
- Summary
- References

CHAPTER 3: COLLOIDAL SILICA

- Introduction
- First Generation Product
- The Second Generation
- The Third Generation
- Latest Generations

CHAPTER 4: COLLOIDAL SILICA APPLICATION

- Retention
- Drainage
- Increased Productivity
- Improved Strength
- Porosity
- The Colloidal Silica Tool
- Bibliography

CHAPTER 5: ORGANIC "MICROPARTICLES"

- Evolution of Organic Microparticle Mechanism
- Three-Dimensional Constrained Structure as "Microparticle"
- Organic Microparticle Types
- References

CHAPTER 6: HECTORITE MICROPARTICLE SYSTEMS

- Introduction
- Smectite Clays
- Hectorite Clays
- Use of Coagulants and Flocculants with Hectorite
- Effects of Hectorites on Retention, Drainage, and Formation
- Use of Synthetic Hectorite
- Acknowledgements
- References

CHAPTER 7: DUAL POLYMER RETENTION SYSTEM

- History of Dual Polymer Retention Systems
- Definitions
- Dual Polymer Systems
- Choice of Dual Polymer System
- Effects of Dual Polymer System on Retention, Drainage, and Formation
- Advantages of Dual Polymer Systems
- Feed Systems for Dual Polymer Applications
- Effect of Furnish on Dual Polymer Systems
- Effect of Fillers on Dual Polymer Systems
- Effect of Basis Weight on Dual Polymer Systems
- Effect of Paper Machine Type and Setup on Dual Polymer Systems
- Evaluation of Dual Polymer Systems in the Laboratory
- Evaluation of Dual Polymer Systems in the Paper Mill
- Dual Polymer Systems in Acid Papermaking
- Dual Polymer Systems in Neutral/Alkaline Papermaking
- Avoiding Problems with Dual Polymer Systems
- Examples of Dual Polymer Systems
- Use of Cationic Coagulants to Neutralize Anionic Charge in Waste Paper
- Use of Cationic Coagulants and Cationic Flocculant Dual Polymer
- Future for Dual Polymer Systems
- Acknowledgements
- References

CHAPTER 8: CLAY MINERALS

- Introduction
- Structure and Composition of Clays
- Retention/Drainage/Formation
- Acknowledgements
- Literature

- Appendix

CHAPTER 9: THE MECHANISM OF MICROPARTICLE IN DRAINAGE AND RETENTION: TRANSMISSION ELECTRON MICROSCOPY OBSERVATIONS

- Abstract
- Introduction
- Transmission Electron Microscopy as a Tool to Examine Flocculation
- Experimental
- The Interactions of Microparticles with Anchored cPAM
- Results and Discussion
- Conclusions
- Acknowledgements
- References

Index