

Contents

Foreword	vii
General Preface	ix
Preface to Volume Four	xi

Part A: Principles and Methods of Measuring Moisture in Liquids and Solids

SECTION I: PHYSICAL AND CHEMICAL METHODS

1. Gas Chromatographic Determination of the Moisture Content of Grain, <i>Ernest L. Weise, Robert W. Burke and John K. Taylor</i>	3
2. Hygrometric Method of Measuring Moisture Contents in Porous Materials, <i>Elda De Castro</i>	7
3. A Thermocouple Psychrometer for Measuring the Relative Vapor Pressure of Water in Liquids or Porous Materials, <i>L. A. Richards</i>	13
4. Direct Spectrophotometric Determination of Moisture Content of Grain and Seeds, <i>Karl H. Norris and Joe R. Hart</i>	19
5. Improved Apparatus for Moisture Extraction from Friable Materials, <i>K. Kostyrko and T. Plebanski</i>	27
6. Non-steady-state Method for the Determination of Moisture Content in Structures, <i>B. H. Vos</i>	35
7. Moisture Balance, <i>Kamekichi Shiba and Tadashi Ichinose</i>	49
8. The Determination of Water in Storable Rocket Propellants. A Comparison of Several Analytical Techniques, <i>Wm. L. Clark, Anthony Nudo and Peter Yin</i>	55
9. An Infrared Instrument for the Measurement of the Quality of Steam, <i>M. Greenberg</i>	63
10. Infrared Analysis of Water, <i>W. M. Trippier</i>	79

SECTION II: DIELECTRIC, RESISTANCE AND CAPACITANCE METHODS

11. Measurement and Control of Moisture Content by Microwave Absorption, <i>Alec Watson</i>	87
12. Improvement of Moisture Determination by Capacitance Measurement through Density Correction, <i>F. J. Hughes, J. L. Vaala and R. B. Koch</i>	95
13. A Portable Electronic Moisture Detector for Reinforced Plastics and Its Application, <i>John O. Outwater</i>	99
14. Plaster of Paris Block Electrical Measuring Unit for Making a Continuous Measurement of Soil Moisture under Field Conditions, <i>George John Bouyoucos</i>	105
15. The Use of Capacitance Methods for Determining Quantities of Materials in Mixtures, <i>Joel E. Fletcher</i>	113
16. Electric Measurements of Soils Porosity or Moisture Content, <i>H. Cambefort and C. Caron</i>	119
17. Determination of Moisture in Canadian Grain by Electric Moisture Meter, <i>V. Martens and I. Hlynka</i>	125
18. Moisture Measurement by High-frequency Currents, <i>R. P. Leroy</i>	135
19. Continuous Moisture Measurement in Solids, <i>Robert M. Green</i>	141

SECTION III: NUCLEAR METHODS

- | | |
|--|-----|
| 20. Nuclear Magnetic Resonance as a Technique for Measuring Moisture in Liquids and Solids, <i>William L. Rollwitz</i> | 149 |
| 21. The Application of Nuclear Magnetic Resonance to the Measurement of the Moisture Content of Coals and Cokes, <i>I. F. Galbraith, W. R. Ladner and A. E. Stacey</i> | 163 |
| 22. Neutron Scattering Measurement of Soil Moisture: Development and Current Status, <i>C. H. M. van Bavel</i> | 171 |
| 23. Field Determination of Moisture and Density in Soils by the Nuclear Methods, <i>J. Huet</i> | 185 |
| 24. Measurement of Moisture in Raw Materials for Iron Making by Neutron Slowing Down, <i>Yoshio Miyashita</i> | 195 |
| 25. Calibration of a Neutron Soil Moisture Meter, <i>K. N. Burn</i> | 205 |
| 26. Measurement of Moisture Content of Soil by Radioisotopes, <i>E. E. De Beer and E. H. G. Goelen</i> | 213 |
| 27. On the Metrological Parameters in the Measurement of Moisture, <i>I. Apostol and M. Onicescu</i> | 225 |

Part B: Interaction of Moisture and Materials

SECTION I: SIGNIFICANCE AND THEORY

- | | |
|--|-----|
| 28. Moisture Content—Its Significance and Interaction in a Porous Body, <i>R. F. Feldman and P. J. Sereda</i> | 233 |
| 29. Suction and Its Use as a Measure of Moisture Contents and Potentials in Porous Materials, <i>E. Penner</i> | 245 |
| 30. Interactions in the Clay-Water System, Physical Principles and Applications, <i>H. Van Olphen</i> | 253 |

SECTION II: EXPERIMENTAL

- | | |
|--|-----|
| 31. Standardization of the Dish Method for Measuring Water Vapor Transmission, <i>F. A. Joy and A. G. Wilson</i> | 259 |
| 32. Method for the Measurement of the Resistance to Water Vapor Diffusion of Clothing Materials, <i>L. H. Turl and J. E. Kennedy</i> | 271 |
| 33. The Rate of Sorption of Water Vapor by Thin Materials, <i>G. N. Christensen</i> | 279 |
| 34. Dimensional Change of Plastic Film caused by Moisture Sorption, <i>Yasushi Yano</i> | 295 |
| 35. Control and Measurement of Moisture in Wood, <i>R. L. Youngs and W. L. James</i> | 307 |
| 36. Moisture Content Variations in Logging Slash, <i>William G. Morris</i> | 321 |
| Author Index | 327 |
| Subject Index | 329 |