

**LABORATORY
EXERCISES IN
APPLIED CHEMISTRY**

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Laboratory exercises in applied chemistry by Wilhelm Moldenhauer

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WILHELM MOLDENHAUER

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APPLIED CHEMISTRY**

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LABORATORY EXERCISES IN APPLIED CHEMISTRY

FOR STUDENTS IN TECHNICAL SCHOOLS AND
UNIVERSITIES

BY

DR. WILHELM MOLDENHAUER

PRIVATDOZENT AT THE DARMSTADT TECHNICAL SCHOOL

AUTHORIZED TRANSLATION

BY

LAWRENCE BRADSHAW, D.Sc., Ph.D.

WITH THIRTY-SIX FIGURES IN THE TEXT

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AUTHOR'S PREFACE

ALTHOUGH technical analysis has long been included in the curricula of technical colleges, a textbook devoted solely to this subject is still lacking. Laboratory manuals and the like generally contain little more than mere descriptions of technical methods of analysis, and explanations of the underlying chemical principles or of their applications are seldom attempted. It is evident that such books can be of very little help to students. The mechanism of the reactions involved in analytical methods is by no means so clear that explanation is unnecessary, since a student usually begins technical analysis at a comparatively early stage in his course. Neither can it be assumed that the student has sufficient knowledge of the practical side of the subject to enable him to grasp the full significance of the analysis in which he is engaged. Only when the analyst understands what part the raw material under examination is destined to play in subsequent industrial operations, how a manufactured product has reached its final condition and for what purpose it is to be used, is he in a position to appreciate the importance of the various determinations, or the consequences that might ensue from a faulty analysis. The author, as lecturer in the Darmstadt Technical School, knows from his long experience that it is just the emphasis laid upon the technical application of an analysis which deepens the student's knowledge and understanding of chemical processes. Interest is stimulated in the analysis itself, which is thus saved from being regarded merely as an unnecessary extension of ordinary quantitative analysis. The book of exercises now presented originated in a desire to produce a really useful laboratory book which should meet the requirements of students, and for this

reason it is not only provided with such chemical explanations as seem essential to the clear understanding of the methods themselves, but is also well supplied with notes on the technology of the subject. It comprises practically all the exercises included in the course of study at the local Technical School. These have been selected in such a way that the student is made familiar with the best and most characteristic examples of technical methods of analysis, and at the same time he obtains a general view of the most important branches of the chemical industry. The contents of this book can be mastered by a diligent and capable student in six months. If, during the progress of the experiments in the laboratory, he makes use of his leisure moments to read through the explanations and remarks attached to the exercises, the purpose for which the book was written will have been completely achieved.

W. MOLDENHAUER

DARMSTADT.

TRANSLATOR'S NOTE

IN preparing this translation from the first German edition a few notes of purely local interest have been omitted, while others have been added where necessary. The latter are indicated in the text.

The translator desires to express his thanks to Messrs. A. T. Green and H. V. Thompson, M.A., for valuable assistance in reading through the manuscript and proof-sheets.

L. B.

STOKE-ON-TRENT,
1921.

CONTENTS

GENERAL PART

	PAGE
SCIENTIFIC AND TECHNICAL ANALYSIS, 1. SAMPLING, 2. FURTHER PREPARATIONS FOR ANALYSIS, 3. WEIGHING, 4. ANALYTICAL DEVICES, 5. VOLUMETRIC ANALYSIS, 7. SPECIFIC GRAVITY DETERMINATIONS, 8. CALCULATION OF RESULTS, 13.	

SPECIAL PART

1. COAL - - - - -	15
Moisture, 15. Ash, 15. Coke, 16. Sulphur, 17. Hydrogen and Carbon, 18. Nitrogen, 19. Calorific Value, 19. General Remarks, 22.	
2. DRINKING-WATER AND WATER FOR INDUSTRIAL PURPOSES - - - - -	26
A.—Full Chemical Analysis: Total Solids, 26. Reducing Capacity, 27. Oxygen, 27. Carbonic Acid, 28. Sulphates, 30. Chlorine, 30. Nitrates, 31. Nitrites, 31. Ammonia, 32. Silica, Iron, Alumina, Lime, and Magnesia, 34. Alkalis, 37. General Remarks, 38.	
B.—Abbreviated Analysis: Pfeifer-Wartha Method, 40. Clark's Method, 42.	
3. COAL GAS - - - - -	44
Volumetric Analysis: (a) Carbon Dioxide, 46. (b) "Heavy Hydrocarbons," 47. (c) Oxygen, 48. (d) Carbon Monoxide, 50. (e) Hydrogen and Methane, 50: Sulphur, 55. Calorific Value, 57. General Remarks, 58.	

	PAGE
4. BALLOON GAS - - - - -	61
Volumetric Analysis, 61. Specific Gravity, 61. General Remarks, 65.	
5. SPENT OXIDE - - - - -	66
Moisture, 66. Sulphur, 66. Cyanogen, 66. Ammonia, 68. Thiocyanates, 68. Cyanide Slime and Cake: Cyanogen, 69. Ammonia, 70. Thiocyanate, 70. General Remarks, 70.	
6. PYRITES - - - - -	73
Sulphur, 73. Copper, 74. Zinc, 75. Arsenic, 76. General Remarks, 76.	
7. NITROSO-SULPHURIC ACID - - - - -	78
Nitrous Acid, 78. Total Nitrogen Acids, 78. Lunge's Gas Volumeter, 80. General Remarks, 81.	
8. FUMING SULPHURIC ACID—OLEUM - - - - -	83
Indirect Determination, 83. Direct Determination, 85. General Remarks, 86.	
9. CHILE SALTPETRE - - - - -	90
Nitrate, 90. Chloride and Perchlorate, 93. General Remarks, 94.	
10. BLACK ASH - - - - -	99
Total Lime, 99. Free Lime, 100. Total Alkalis, 101. Sodium Sulphide, 101. Sodium Sulphate, 102. Statement of Results, 102. General Remarks, 102	
11. AMMONIA SODA PROCESS - - - - -	106
A.—Raw Material: I. Ammonium Sulphate: Moisture, 106. Ammonia, 106. Free Sulphuric Acid, 108. Residue after Ignition, 108. II. Quicklime: Free Lime, 108. Calcium Carbonate, 109.	
B.—Process Control: Carbonators; Total Ammonia, 109. Free and "Carbonic" Ammonia, 109. Combined Ammonia, 111. General Remarks, 111.	
12. WELDON MUD - - - - -	114
Manganese Dioxide, 114. Total Manganese, 114. "Base," 115. General Remarks, 116.	