TREATISE ON ANALYTICAL CHEMISTRY

PART I
THEORY AND PRACTICE
VOLUME 4

TREATISE ON ANALYTICAL CHEMISTRY

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PART I
THEORY AND PRACTICE

VOLUME 4

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TREATISE ON ANALYTICAL CHEMISTRY

I. M. KOLTHOFF and PHILIP J. ELVING, *Editors*

ERRATA

PART I, VOLUME 1

4. Principles and Methods of Sampling, by *William W. Walton* and *James I. Hoffman*

Page 71: the definition of terms following the equation should read as follows:

where σ = standard deviation of the population; μ = the average value of the property in the population (arithmetic mean); and x = the value of the property of a single item or discrete portion of the population.

Some additional symbols that will be needed later on are as follows:

V = variance of the sample;
s = standard deviation of the sample;
$\bar{x}$ = the average value of the property in the sample (arithmetic mean); and
n = number of items (observations) in a sample.

14. Complexation Reactions, by *Anders Ringbom*

Page 551, line 28: for "less labile" read "more labile"

Page 559, Table 14.V, penultimate line: for "TiO(III)" read "TiO(IV)"

Page 583, legend to Fig. 14.16: for "Titration of a metal, M, with . . ." read "Titration of a metal, M, in $10^{-2}M$ concentration with . . ."

Page 592, Table 14.IX: the metal-dithizone stability constants, except that for zinc, are extraction constants, i.e., $[MI_n]$ refers to the CCl_4 phase

Page 596, Fig. 14.22: the abscissa scale of the figure has been shifted one pH unit to the left, i.e., the correct pH values are one unit lower than in the figure

Page 605, Fig. 14.27: for "pM" on the ordinate axis read "Absorbance"

Page 606, Equation (73): the right-hand term should be:

$$\frac{0.188\ (1 + [\mathrm{M}]K_{\mathrm{MI}})}{(A - A_{\mathrm{MI}}^{\mathrm{max.}})\ T[\mathrm{M}]K_{\mathrm{MI}}}$$

Page 612, line 5 of the *Example:* for "as indirect indicator" read "as indicator"

Page 614, Equation (89): in the first term on the right-hand side read "$([\mathrm{M_IL}]_{\mathrm{eq.}}/K_{\mathrm{M_IL}})$" instead of "$([\mathrm{M_IL_{eq.}}]/K_{\mathrm{M_IL}})$"

PART I, VOLUME 2

22. Principles of Separations, by *Lockhart B. Rogers*

Page 919: the last two lines of Section I-A should be: ". . . briefly; the relative positions of solutes in a continuous process with reflux are, however, qualitatively the same as in a batch chromatographic process."

Page 920, line 11: should read ". . . differing only slightly in chemical or physical properties. . . "

Page 927, last line of Section II: should read ". . . handled by a chromatographic withdrawal process. . . ",

Page 937, Equation (32): insert n, so that the equation begins as follows:

$$r_t = n\left(\frac{\log. . .}{\log. . .}\right.$$

Page 943, Equation (49): delete the approximation sign and replace with an equal sign; i.e., it should read

"$. . . v_m)]^2 = 8[. . .$"

Page 945, line 12: should read ". . . other countercurrent processes with reflux and in chromatography, each volatile. . ."

28. Electromigration and Electrophoresis, by *John R. Cann*

Page 1187, 3rd line from the bottom: should read ". . . the substituting anions increasing. . ."

Page 1188, first line of the last paragraph: ". . . applicable to electrophoresis, provided. . ."

Page 1204, second line of the last paragraph: ". . . filter paper is probably that of. . ."

Page 1212, penultimate and last lines: ". . . glucose, galactose, fructose, and lactose in such complex. . ."

Page 1216, fourth line of the second paragraph: the first word is "physicochemical"

PART I, VOLUME 3

33. Chromatography: General Principles, by *I. Rosenthal, A. R. Weiss,* and *V. R. Usdin*

Page 1415, Equation (1) should read:

$$v_{z_1} = x/t_{z_1} \quad \text{and} \quad v_{z_2} = x/t_{z_2}$$

Page 1417, line 17: component Z_1 should read Z

35. Chromatography: Columnar Liquid–Solid Ion-Exchange Processes, by *William Rieman* III and *Arthur C. Breyer*

Page 1545, Equation (11): the second term in the denominator should be $K_1[H^+]$

PART II, VOLUME 1

Principles of Inorganic Nomenclature, by *W. Conard Fernelius*

Page 3, line 16: should read "word," not "work"

Page 11, last line before Section IV: should read ". . . H_2SO_4, etc., does not indicate the structure. . ."

Page 19, Table V: line 23 should read "*o*-Phenanthroline (1,10-phenanthroline)"

Page 22, Table VI: in the name of the fifth coordination compound the parenthetical character following "nickel" should be a zero, not the letter "oh"

Page 23, Section 9: the name of the second example should read "dichloro {*N*,*N*-dimethyl-2,2′-thiobis-(ethylamine-*N*′, *S*)} platinum(II)"

Page 33: insert as the fifth reference the following: "Inorganic Nomenclature: I.U.P.A.C. Rules," in *Handbook for Chemical Society Authors*, Special Publication No. 14, The Chemical Society, London, 1960, Chapter 2, pp. 16–45.

The Inert Gases (Group 0), by *Gerhard A. Cook*

Page 217, line 6: should read "Section IV-A-7-g"

Page 270: starting at the end of line 6 the procedure should read as follows:

"Seal a piece of glass tubing to a clear-glass, 550-w. tungsten filament lamp bulb, on the end opposite the lamp base. Evacuate the bulb through the glass tubing, fill the bulb with argon to a pressure of about 400 mm., and bake it for 15 minutes at 300°C. Evacuate, admit the argon sample to a pressure of about 5 mm., and pump out again to flush out desorbed impurities. Cool to room temperature and fill the bulb with the argon sample to a pressure of about $^3/_4$ atm. Seal off the glass tubing previously attached to the bulb. Burn the bulb. . ." Following this revision, Figure 11—originally cited in the superseded material—then applies to the apparatus described on page 273.

Page 278, under "6. Nitrogen in Argon": the method given here has now been largely superseded by a spectroscopic method described in G. A. Cook, Ed., *Argon, Helium, and the Rare Gases*, Interscience (Wiley), New York, 1961, Volume II, pp. 532–533.

Page 297, Reference 111: the second author's name is to be spelled "Montgareuil"

PART II, VOLUME 2

Gallium, Indium, and Thallium, by *Hiroshi Onishi*

Page 18, line 6, first paragraph: the last word of this line should be "in," not "with"

Page 21, last line: "Sn(III)" should be "Sn(II)"

Page 28, line 9 (under "The anion-exchange (micro) method"): "V(VI)" should read "V(V)"

Page 38, line 10: the last substance in this equation should be "$3H_2O$" instead of "$2H_2O$"

Page 51, line 16: citation should be to Section XI-D, not Section XI-C

Page 74, Table XXIII: the reference for "Stone meteorite" should be [c], not [a]

Page 78, Table XXVII, fourth and fifth lines: Reference [b] applies to ranges 0–1% Ga, 0–10% Ga

Page 82, Table XXX, line 9: Reference [e] applies to the range > 1 γ

Iron, by *L. M. Melnick*

Page 251, Table II: line 2 should read

Boiling point	3000°C.

Line 5 should read

Electrical conductivity (20°C.)	0.1 (microohm-cm.)$^{-1}$

Line 8 should read

Resistivity (20°C.)	10 microohms-cm.

PART II, VOLUME 7

Fluorine, by *Charles A. Horton*

Page 243: Figure 3 is incorrectly attributed to R. H. Powell and O. Menis, *Anal. Chem.*, **30,** 1546 (1958), and *U. S. At. Energy Comm.*, **ORNL-2512** (1958). The figure actually shows a nickel pyrohydrolytic reactor designed by C. D. Susano, J. C. White, and J. E. Lee, Jr., which was described and illustrated originally in *Anal. Chem.*, **27,** 453 (1955). Drs. Howell and Menis favor the use of a simple, less costly all-quartz apparatus, which they discuss and illustrate in their publications cited above.

TREATISE ON ANALYTICAL CHEMISTRY

PART I
THEORY AND PRACTICE

VOLUME 4:

SECTION D-1
Magnetic Field Methods of Analysis
Chapters 38–41

SECTION D-2
Electrical Methods of Analysis
Chapters 42–52

With the cooperation of CHARLES N. REILLEY, *University of North Carolina*, as section advisor

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Considering the wide scope of the Treatise, the Editors have felt it desirable to consult with experts in specialized fields of analytical chemistry. For Section D-2, dealing with "Electrical Methods of Analysis," they have been fortunate in securing the cooperation of Dr. Charles N. Reilley, assisted by Dr. Royce W. Murray. Their constructive help in the preparation of this volume is acknowledged with gratitude.

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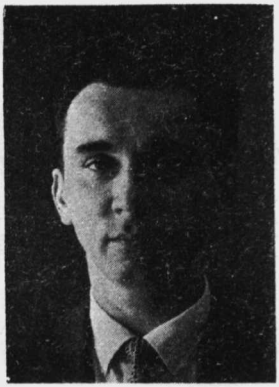

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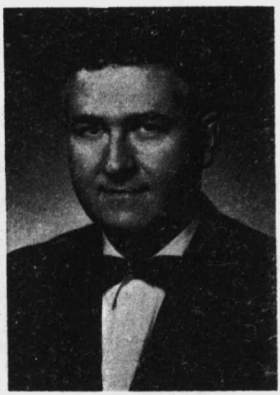

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PART I. THEORY AND PRACTICE

CONTENTS—VOLUME 4

SECTION D-1: Magnetic Field Methods of Analysis