

- | | |
|-------------------------|---|
| 1. Record Nr. | UNIPARTHENOPE000013657 |
| Autore | Schwarzschild, Martin |
| Titolo | Structure and evolution of the stars / by Martin Schwarzschild |
| Pubbl/distr/stampa | Princeton : Princeton University Press, c1958 |
| Titolo uniforme | Structure and evolution of the stars |
| Descrizione fisica | XIII, 296 p. : fig, tab. ; 25 cm |
| Disciplina | 523.8 |
| Collocazione | 523.8/103
S 23/13 |
| Lingua di pubblicazione | Inglese |
| Formato | Materiale a stampa |
| Livello bibliografico | Monografia |
| 2. Record Nr. | UNINA9910974453903321 |
| Autore | Whitney Cynthia Kolb <1941-> |
| Titolo | Algebraic chemistry : applications and origins // Cynthia Kolb Whitney |
| Pubbl/distr/stampa | New York, : Nova Publishers, c2013 |
| ISBN | 1-62257-866-X |
| Edizione | [1st ed.] |
| Descrizione fisica | 1 online resource (386 p.) |
| Collana | Chemical engineering methods and technology
Mathematics research developments |
| Disciplina | 541.01/512 |
| Soggetti | Molecular dynamics - Mathematics
Ionization constants - Measurement
Quantum chemistry |
| Lingua di pubblicazione | Inglese |
| Formato | Materiale a stampa |
| Livello bibliografico | Monografia |
| Note generali | Description based upon print version of record. |
| Nota di bibliografia | Includes bibliographical references and index. |
| Nota di contenuto | Intro -- ALGEBRAIC CHEMISTRY -- ALGEBRAIC CHEMISTRY --
CONTENTS -- PREFACE -- INTRODUCTION -- 1. THE BACKGROUND -- |

2. THIS BOOK -- 2.1. About Part I -- 2.2. About Part II -- 2.3. About Part III -- 2.4. About So Much More -- 3. THE CHARACTERS -- PART I. CHEMISTRY AS NUMERICAL REGULARITIES -- PROLOG TO PART I -- ABOUT PATTERNS -- REFERENCES -- APPENDIX: THE PERIODIC TABLE, MENDELEYEV STYLE -- IONIZATION POTENTIALS OF ATOMS -- ABSTRACT -- INTRODUCTION -- 1. OBSERVED BEHAVIOR OF IONIZATION POTENTIALS OF ALL ORDERS -- 2. DETAILS ON BEHAVIOR OF FIRST-ORDER IONIZATION POTENTIALS -- CONCLUSION -- ACKNOWLEDGMENTS -- APPENDIX: BASIC DATA ON FIRST-ORDER IONIZATION POTENTIALS OF ATOMS -- IONIZATION POTENTIALS OF IONS -- ABSTRACT -- INTRODUCTION -- 1. MODEL DEVELOPMENT -- 2. SYMBOLIC FORMULAE -- CONCLUSION -- AN INVITATION TO READERS -- APPENDIX: FORMULAE AND EVALUATIONS FOR SEQUENTIAL IONIZATIONS OF SELECTED ELEMENTS -- 1. Hydrogen -- 2. Helium -- 3. Lithium -- 4. Beryllium -- 5. Boron -- 6. Carbon -- 7. Nitrogen -- 8. Oxygen -- 9. Fluorine -- 10. Neon -- 11. Sodium -- 12. Magnesium -- 13. Aluminum -- 14. Silicon -- 15. Phosphorus -- 16. Sulfur -- 17. Chlorine -- 18. Argon -- 19. Potassium -- 21. Scandium -- 24. Chromium -- 26. Iron -- 27. Cobalt -- 29. Copper -- 30. Zinc -- 31. Gallium -- 32. Germanium -- 33. Arsenic -- 35. Bromine -- 36. Krypton -- 37. Rubidium -- 39. Yttrium -- 45. Rhodium -- 46. Palladium -- 47. Silver -- 48. Cadmium -- 49. Indium -- 50. Tin -- 51. Antimony -- 54. Xenon -- 55. Cesium -- 57. Lanthanum -- 74. Tungsten -- 78. Platinum -- 79. Gold -- 80. Mercury -- 81. Thallium -- 82. Lead -- 83. Bismuth -- 84. Polonium -- 86. Radon -- 87. Francium -- 89. Actinium -- IONS AND STATES OF MATTER -- ABSTRACT -- INTRODUCTION -- 1. STATE CHANGE TEMPERATURES AND FIRST ORDER IONIZATION POTENTIALS -- 2. RELATIONSHIPS BETWEEN SOME ELEMENT PAIRS. 2.1. Hydrogen and Helium -- 2.2. Lithium and Beryllium -- 2.3. Nitrogen and Oxygen -- 3. STATES OF MATTER AND STATES OF IONIZATION -- 3.1. Melting Points -- 3.2. Boiling Points -- 3.3. Phase Diagrams -- 4. HOW TEMPERATURE DRIVES POPULATIONS OF IONIZATION STATES -- 4.1. Boltzmann Factors -- 4.2. The Planck Black-Body Spectrum -- 4.3. A Mechanism for Driving Macroscopic State Changes -- CONCLUSION -- ACKNOWLEDGMENTS -- A RESPITE FOR READERS -- REFERENCES -- SINGULAR ELEMENTS -- ABSTRACT -- INTRODUCTION -- 1. KEYSTONE ELEMENTS -- 2. NOBLE GASSES -- 2.1. Helium -- 2.2. Neon -- 3. HALOGENS -- 3.1. Bromine -- 4. METALS -- 4.1. Mercury -- 4.2. Gallium -- CONCLUSION -- A PROJECT FOR READERS -- REFERENCE -- TYPICAL MOLECULES -- ABSTRACT -- INTRODUCTION -- 1. GENERAL INFORMATION -- 2. DIATOMIC MOLECULES -- 3. TRIATOMIC MOLECULES -- 4. HYDROCARBONS -- 4.1. Methane CH_4 -- 4.2. Ethane C_2H_6 -- 4.3. Propane C_3H_8 -- 4.4. Butane C_4H_{10} -- 4.5. Pentane C_5H_{12} -- 4.6. Hexane C_6H_{14} -- 4.7. Septane, Octane, and Beyond -- 4.8. A Brief Revisit to Hydrocarbons and States of Matter -- CONCLUSION -- A PROJECT FOR READERS -- IMPORTANT REACTIONS -- ABSTRACT -- INTRODUCTION -- 1. HYDROCARBON COMBUSTION -- 2. HYDROCARBON COMBUSTION IN STEPS -- 2.1. Steps in Methane Combustion -- 2.2. Energies from Steps in Methane Combustion -- 2.3. Focus on the First Step of Methane Combustion -- 3. FIRST STEP OF COMBUSTION FOR OTHER HYDROCARBONS -- 3.1. Hexane Combustion, First Step 2 -- 3.2. Septane Combustion, First Step H -- 3.3. Octane Combustion, First Step -- 3.4. Real Combustion, First Step -- 4. FIRST STEP OF COMBUSTION FOR A FUEL MIX -- 5. THE NECESSARY POST SCRIPT TO HYDROCARBON COMBUSTION -- 5.1. Rhodium -- 5.2. Palladium -- 5.3. Platinum -- CONCLUSION -- A PROJECT FOR READERS --

REFERENCES -- CATALYSIS OF CHEMICAL REACTIONS -- ABSTRACT -- INTRODUCTION -- 1. THE EXAMPLE REACTION. 1.1. The Full Reaction -- 1.2. The Textbook Catalyzed Reaction Steps -- 1.3. Why the Textbook Story Didn't Work -- 2. A NEW ATTACK ON THE PROBLEM -- 2.1. The First Catalyzed Reaction Step -- 2.2. The Second Catalyzed Reaction Step -- 2.3. Define More Reaction Steps? -- 3. QUESTIONING THE ASSUMED REACTION -- 4. NATURAL CATALYSIS -- CONCLUSION -- A PROJECT FOR READERS -- ACKNOWLEDGMENTS -- REFERENCES -- ELECTRO-CHEMISTRY IN POWER GENERATION -- ABSTRACT -- INTRODUCTION -- 1. THE ORIGINS OF CONTROVERSY -- 1.1. Lack of Neutrons -- 1.2. Variability of Excess Heat -- 1.3. Lack of Credible Theory -- 2. THE NUMERICAL INFORMATION NEEDED -- 3. WHAT HAPPENS IN THE ELECTROLYTIC SOLUTION -- 4. WHAT HAPPENS AT THE CATHODE -- CONCLUSION -- A PROJECT FOR READERS -- ACKNOWLEDGMENTS -- REFERENCE -- PART II. CHEMISTRY AS QUANTUM MECHANICS -- PROLOG TO PART II -- REFERENCES -- HYDROGEN AS THE PROTOTYPICAL ATOM -- ABSTRACT -- INTRODUCTION -- 1. RADIATION FROM ACCELERATING CHARGES -- 2. TORQUING IN THE HYDROGEN ATOM -- 3. EVEN MORE RADIATION -- 4. BALANCE AT THE GROUND STATE -- 5. EXCITED STATES -- CONCLUSION -- REFERENCES -- GENERAL CHARGE PAIRS -- ABSTRACT -- INTRODUCTION -- 1. HYDROGEN -- 2. POSITRONIUM -- 3. THE PROTON PAIR -- 4. THE ELECTRON PAIR -- CONCLUSION -- REFERENCE -- ELECTRON RINGS AND STRUCTURES THEREOF -- ABSTRACT -- INTRODUCTION -- 1. COMFORTABLE ELEMENTS -- 1.1. A Ring of Three Electrons -- 1.2. Two Rings of Three Electrons -- 1.3. A Ring of Five Electrons -- 1.4. Two Rings of Five Electrons -- 1.5. A Ring of Seven Electrons -- 1.6. Two Rings of Seven Electrons -- 2. UNCOMFORTABLE ELEMENTS -- 3. PECULIAR ELEMENTS -- CONCLUSION -- APPENDIX -- A PROJECT FOR READERS -- ACKNOWLEDGMENTS -- REFERENCES -- EXPLOSIONS AND EXPLANATIONS -- ABSTRACT -- INTRODUCTION -- 1. LOG-LINEARITY OF IONIZATION POTENTIALS. 2. ON THE MEANING OF HIGHER-ORDER IONIZATION POTENTIALS -- 2.1. Observations -- 2.2. Explanations -- 3. ON THE MEANING OF FIRST-ORDER IONIZATION POTENTIALS -- 3.1. Full Periods -- 3.2. Sub-Period Levels -- 3.3. Sub-Period Slopes -- 4. ON THE UTILITY OF HIGHER-ORDER IONIZATION POTENTIALS IN CHEMISTRY -- CONCLUSION -- REFERENCES -- PART III. QUANTUM MECHANICS AS ELECTRODYNAMICS -- PROLOG TO PART III -- REFERENCE -- PHOTONS AND MAXWELL'S EQUATIONS -- ABSTRACT -- INTRODUCTION -- 1. APPROACH -- 2. E'S AND B'S FOR ONE OF THE TWO ORIENTATIONS -- 3. WAVEFORM EVOLUTION -- 4. WAVEFORM ENERGY DENSITIES -- 5. RELATIVE MOTION -- 6. IMPLICATIONS FOR FIELDS DELIVERED -- 7. IMPLICATIONS FOR RELATIVITY THEORY -- CONCLUSION -- ACKNOWLEDGMENTS -- APPENDIX -- [A] Theory of the Photon -- The Concept of Convergence -- REFERENCES -- ON THE INVARIANCE OF MAXWELL'S EQUATIONS -- ABSTRACT -- INTRODUCTION -- 1. EXTENDED TENSOR NOTATION, WITH MATRIX DEMONSTRATIONS -- 3. GALILEAN TRANSFORMATION OF MAXWELL'S EQUATIONS -- CONCLUSION -- REFERENCES -- CONCLUSION -- 1. SOME HISTORY TO RECALL -- 2. THE TASK TO ADDRESS -- 3. SPECIFIC TOOLS TO USE -- ACKNOWLEDGMENTS -- REFERENCES -- INDEX.

Sommario/riassunto

Algebraic chemistry is based on numerical patterns observed in readily available data about ionization potentials of atoms, and on a physical model that interpolates and extrapolates from that data to situations for which data is not readily available, such as ionization potentials for atoms that are already ionized, or corresponding energy increments involved in adding, rather than subtracting, electrons. This Book

presents an approach to chemistry that permits numerical evaluation of many chemical scenarios without use of much computation power. Everything here can be worked out with a hand calculator. The approach thus makes numerical analysis of scenarios in chemistry feasible for students, or up-coming researchers, or retirees, who work with minimal financial support.
