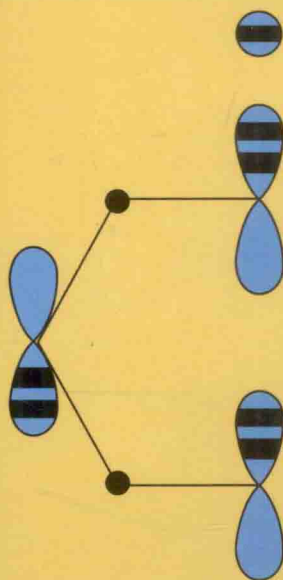
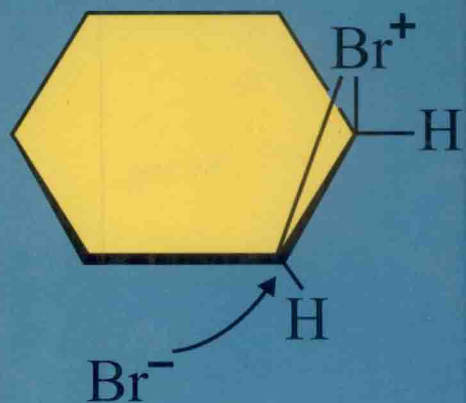


3rd Edition

Organic Reactions and their Mechanisms

P S KALSI



New Age Science

Organic Reactions and their Mechanisms

Third Edition

P S KALSI

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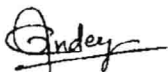
Foreword

The organic chemistry that serves the needs of society is becoming increasingly sophisticated. The students of organic chemistry want not only to creatively enrich the existing scientific knowledge for the betterment of mankind but also apply it for the sustainable development of the subject. However, they are hard pressed to find a general text to support their learning during the first year at University. The general organic chemistry texts have been written to accompany traditional curricular courses and with rather precisely defined requirements. Thus, the students are left with a limited scope to learn chemistry which encourages creativity.

One of the greatest challenges of organic chemistry is to make complex organic molecules. Effective synthetic strategy requires the development of novel selective reactions and reagents. The area has been playing an increasingly important role in serving as a source of understanding organic reactions and their mechanisms. The present book reveals author's belief that students benefit most of all from a book which leads from familiar concepts to unfamiliar ones, not just encouraging them to *know* but to understand and to understand *why*. A practitioner of organic chemistry must be aware of the fundamental reactions along with their mechanisms to have a thorough knowledge and understanding of this area. It is this understanding of organic reactions which provides an impetus into developing new tools for organic synthesis. For the same reason, an indispensable mechanistic insight is provided which is crucial to those who wish to apply these existing tools rationally and to contribute to the further development of novel reagents and methodologies.

Compared with the earlier edition of the book, the present edition offers much more material to be learnt. Thus, this book on organic reactions is far from just a remake or update of a successful earlier version but, as the Publisher notes, is essentially a new book. Previous chapters have been extensively reworked and updated.

The “Organic Reactions and their Mechanisms” is a timely account of the current depth of this area of chemistry. The systematic presentation of the organic reactions will introduce students to the taste of ever growing organic chemistry. In the present work, Prof. Kalsi has set himself the goal of organizing the splendid array of organic reactions with their mechanisms. This provides a concise summary that should be of enormous assistance to those searching for a selective reaction to achieve a desired transformation. Coming from one of the leading authors, “Organic Reactions and their Mechanisms” is an authoritative source for a rapidly expanding field. One must admire Prof. Kalsi’s courage in undertaking this monumental task.



Ganesh Pandey

Head, Division of Organic Chemistry

Preface to the Third Edition

A common approach to teach modern organic chemistry is through organic reactions and their mechanisms.

The present book is aimed to develop ideas to maintain interest of the today's student, his needs and the modern chemistry courses in different universities.

I have therefore, attempted to make this as a modern teaching and a learning text. Different topics and material are presented so as to develop ideas and in order to do this material in a particular chapter threads through the entire text. This book is therefore, a departure from some-long standing textbook traditions and does not present the material in an encyclopedic manner.

Several introductory chapters, *e.g.*, an aromatic character, chemical bonding, acids and bases provide a vehicle for discussing different organic reactions and the proposed mechanisms in the later parts of the book. These introductory chapters incorporate new ideas, new examples so as to develop maturity of thinking well before their use in a particular topic.

Some background and key information needed to understand the main text better is put in boxes. Interesting problems with their solutions have also been put in boxes throughout the text. You are advised to check your competence by solving these problems as soon as you finish reading a particular portion of a topic. You are advised not to look at the answers initially.

References and further reading is given at the end of the book.

I sincerely hope that the discussion in this text is useful and interesting and that you will let me know your experiences.

P. S. KALSI

Preface to the First Edition

Organic chemistry is a rapidly changing field and each year, new exciting advances are made. It may seem to the student that he needs ever more to learn year by year. However, fortunately, this is not so.

The purpose of the present book is to incorporate advances in the area of reaction mechanisms even as basic rules and concepts are emphasized in teaching organic reaction mechanisms. A deep understanding of the reaction mechanisms helps a student to appreciate as to how and why reactants go to products. The mechanistic principles are relatively few, and yet these account for the wide range of reactions of organic compounds. A conceptual understanding of the mechanisms of organic reactions, therefore, helps a student to interrelate and remember the various reactions.

I have been fortunate to have had the opportunity to teach a great variety of students at both the graduate and undergraduate level. Out of this teaching and my ongoing desire to teach the subject-matter in a lively and understandable manner, this, yet new book, on organic reactions and their mechanisms was born.

A fairly comprehensive review of organic structures and material which provides background to the study of mechanisms is presented in the first few chapters. The further presentation follows so that the student appreciates that despite a large number of organic reactions, a relatively few principles suffice to explain all of them.

The study of organic chemistry is much like learning a language where the reactions are the vocabulary and their mechanisms the grammar. The design of the present textbook is, therefore, to ensure that the student has an intellectual grasp of the subject to prepare him not only for his qualifying examination but for various competitive examinations as well. In line with this objective, the references have been kept to a minimum. However, a student may like to pursue individual topics further, thus relevant reviews and books are noted, but the references to the original literature are limited to points of outstanding interest and some recent work. The objective has been to convey a deep understanding of reactions and their mechanisms rather than to bring out a reference text.

An attempt has been made to incorporate several important and recent developments in the subject. Every chapter has been brought up to date to include these. Some of these topics are the use of organo-transition-metal reagents, newer reagents and role of organosilicon compounds.

The text is extensively cross-referenced in order to call the students attention to the related material already presented in earlier chapters or to the material that is to come.

The best way to learn organic chemistry is by solving problems. In each chapter problems are presented not only to create thinking in students mind, but also for the introduction of new material. Answers to these problems can be found at the end.

P. S. Kalsi

Important Reactions and Rearrangements

- Acyloin condensation, 592
Aldol condensation, 220
Alkene metathesis, 272
Allylic shift, 51
Arbuzov reaction, 282
Arndt-Eistert synthesis, 553
Aza-Cope rearrangement, 659
Baeyer-Villiger oxidation, 493, 559
Barton reaction, 594
Beckmann rearrangement, 558
Benzilic acid rearrangement, 552
Benzoin condensation, 238
Birch reduction, 514
Chichibabin reaction, 376
Claisen ester condensation, 236
Claisen reaction, 229
Claisen rearrangement, 661
Claisen-Schmidt reaction, 226
Clemmensen method, 519
Cope rearrangement, 655
Curtius rearrangement, 557
Dakin reaction, 492
Darzens condensation, 231
Degenerate rearrangements, 653
Dieckmann condensation, 237
Diels-Alder reaction, 630
Enamine reactions, 239
Ene reaction, 663
Epoxidation, 477
Favorskii rearrangement, 560
Friedel-Crafts alkylation, 334, 336
Friedel-Craft acylation reaction, 336
Fries rearrangement, 355
Gattermann-Aldehyde synthesis, 357
Gattermann-Koch reaction, 357
Gomberg reaction, 590
Heck reaction, 267
Hoffmann rearrangement, 555
Hunsdiecker reaction, 590
Jones oxidation, 462
Knoevenagel reaction, 232
Kolbe electrolytic reaction, 591
Lossen rearrangements, 556
Mannich reaction, 247
Meerwein-Ponndorf-Verley reduction, 534
Michael addition, 234
Mitsunobu reaction, 288
Mozingo reaction, 522
Neber rearrangement, 563
Norrish type I cleavage, 393, 395
Oppenauer oxidation, 468
Oxo reaction, 269
Oxy-Cope rearrangement, 659
Paterno-Büchi reaction, 400
Pauson-Khand reaction, 270
Perkin reaction, 230
Peterson reaction, 298
Photo-Fries rearrangement, 355, 413
Prevost reaction, 485
Pinacol rearrangement, 550
Prins reaction, 246
Pschorr ring closure, 590
Reformatsky reaction, 230
Reimer-Tiemann reaction, 355
Retro-aldol reaction, 229
Robinson annulation, 235
Rosenmund reduction, 508
Schmidt rearrangement, 556
Semipinacol rearrangement, 551

- Shapiro reaction, 521
Simmons-Smith synthesis, 434
Sommelet reaction, 469
Stobbe condensation, 231
Sommelet-Hauser rearrangement, 564
Stevens rearrangement, 563
Stork enamine reactions, 239
Swern oxidation, 466
Thorpe reaction, 238
Tiffeneau-Demjanov reaction, 293
Ullmann reaction, 591
Wacker reaction, 269
Wadsworth-Emmons reactions, 285
Wadsworth-Emmons variant, 281
Wagner-Meerwein rearrangement, 545
Wittig reaction, 280
Wittig rearrangement, 563
Wolff rearrangement, 553
Wolff-Kishner reduction, 520

Some More Important Reagents

- Acyl-iron complexes, 275
AIBN, 571, 573
Allylsilanes, 301
Alkyl mercury halides, 573
9-BBN, 306
Bakers yeast, 538
Boron containing reagents, 304
Butyl lithium, 113
Catecholborane, 306
Carbenoid, 434
Chloranil, 473
Collins reagent, 463
Chromium arene complexes, 277
Chromium trioxide, 462
Dimethylformamide, 358
Dioxiranes, 476
Disiamylborane, 306
DCC, 464
DDQ, 473
DMP, 467
DMSO, 464, 466, 467, 471
Epoxides, 537
Gilman reagents, 339
Grignard reagents, 316, 574
Ipc.BBN, 534
Ipc₂ BH, 308
LDA, 112, 114, 199
Lead tetraacetate, 486, 600
Lithium dialkylcuparates, 322
Manganese dioxide, 468
Nickel and its complexes, 278
N-Bromosuccinimide, 52, 575
Organolithium reagent, 322
Palladium chloride, 488
PCC, 463
PDC, 463
Peroxyacids, 474
Periodic acid, 486
Phosphorous ylides, 280
Selenium dioxide, 469, 470
Selectride, 531
Silicon reagents, 297
Silyl ether protecting groups, 302
Sodium cyanoborohydride, 539
Sterically congested boranes, 306
Sulphur ylides, 290
Tebbe reagent, 273
TEMPO, 467
Thexylborane, 306
Trimethylsilyl iodide, 303
Triphenylphosphine, 481
Tributyltin hydride, 573
Vinylsilanes, 300
Wilkinson's catalyst, 266, 507
Ziegler-Natta catalyst, 271

Contents

Chapter 1	Fundamental Principles and Special Topics	1–38
1.1	Structure and Bonding in Organic Compounds	1
1.2	Electronegativity—Dipole Moment	12
1.3	Inductive and Field Effects	14
1.4	Hydrogen Bond	18
1.5	Other Weaker Bonds	21
1.6	Bond Dissociation Energy	28
1.7	The Hammett Equation—Linear Free Energy Relationship	30
1.8	Taft Equation	33
1.9	Steric Effects, Strain and Bredt Rule	34
	<i>Problems</i>	37
	<i>Answers to the Problems</i>	38
Chapter 2	Delocalized Chemical Bonding	39–86
2.1	1, 3-butadiene a Typical Conjugated System	39
2.2	Resonance	41
2.3	Aromaticity	53
2.4	The Terms Aromatic, Antiaromatic and Nonaromatic	57
2.5	Annulenes	59
2.6	The Frost Circle—Molecular Orbital Description of Aromaticity and Antiaromaticity	62
2.7	Aromatic and Antiaromatic Ions	63
2.8	Other Non-Benzenoid Aromatic Compounds	68
2.9	Heterocyclic Aromatic Compounds	70
2.10	Metallocenes and Related Compounds	71
2.11	Fused Benzenoids and Fullerenes	72
2.12	Homoaromatic Compounds	77
2.13	Hyperconjugation	78
2.14	Hexahelicene	79

2.15	Tautomerism	79
	<i>Problems</i>	83
	<i>Answers to the Problems</i>	85

Chapter 3 Organic Acids and Bases **87–121**

3.1	The Bronsted-Lowry Concepts of Acids and Bases	87
3.2	The Lewis Definition of Acids and Bases	90
3.3	The Relation Between Structure and Acidity	91
3.4	Bases	106
3.5	Relation Between Structure and Basicity	106
3.6	Synthetic Applications of Lithium Diisopropylamide (LDA)	114
3.7	Acid-Base Reactions	116
3.8	The Effects of the Solvent on Acid and Base Strength	117
3.9	Leveling Effect	118
3.10	Hard and Soft Acids and Bases	118
	<i>Problems</i>	119
	<i>Answers to the Problems</i>	119

Chapter 4 Organic Reactions and the Determination of their Mechanisms **122–175**

4.1	Mechanistic Classification	122
4.2	Nucleophiles and Electrophiles	130
4.3	Electron Movement	131
4.4	Equilibria and Free Energy	131
4.5	Free Energy Change in Relation to Bond Strengths and Degree of Order in a System	132
4.6	Reaction Rates	134
4.7	The Transition State—Activation Energy	135
4.8	Transition State Theory—Measurement of Activation Energy	135
4.9	Reaction Profile Diagrams	137
4.10	The Rate Determining Step	138
4.11	Thermodynamic and Kinetic Control	139
4.12	Applications of Kinetic Principles	141
4.13	The Curtin-Hammett Principle—Importance of Transition State	144
4.14	Microscopic Reversibility	145
4.15	Methods of Determining Mechanisms	146
4.16	Reactive Intermediates	154
	<i>Problems</i>	174
	<i>Answers to the Problems</i>	175

Chapter 5 Aliphatic Nucleophilic Substitution and its Synthetic Applications **176–215**

5.1	Introduction	176
5.2	Synchronous Substitution— S_N2 Process	182
5.3	Substitution by Ionization— S_N1 Mechanism	196
5.4	S_N1 Versus S_N2 Reactions	198
5.5	Other Aliphatic Substitution Pathways	200
5.6	The Role of Ion Pairs	202
5.7	Neighbouring Group Participation and Nonclassical Carbocations	204
5.8	Nucleophilic Substitution at Silicon	212
	<i>Problems</i>	212
	<i>Answers to the Problems</i>	214

Chapter 6 Common Organic Reactions and their Mechanisms **216–262**

6.1	Base Catalysed Reactions (Formation of Carbon-Carbon Bonds)	216
6.2	Stork Enamine Reactions (Formation of Carbon-Carbon Bonds)— Reaction of an Enamine with Reactive Electrophiles	239
6.3	Acid Catalysed Reactions (Formation of Carbon-Carbon Bonds)	246
6.4	Reactions of Carboxylic Acids and their Derivatives	250
6.5	Hydrolysis of Amides	257
	<i>Problems</i>	258
	<i>Answers to the Problems</i>	260

Chapter 7 Reagents in Organic Synthesis and Relevant Name Reactions **263–328**

7.1	Organotransition Metal Reagents	263
7.2	Some Transition Metal Organometallic Reactions	266
7.3	Phosphorus Containing Reagents	280
7.4	Organosulphur Compounds: Sulphur Ylides	289
7.5	Silicon Reagents	297
7.6	Boron Containing Reagents	304
7.7	Organometallic Reagents	316
	<i>Problems</i>	326
	<i>Answers to the Problems</i>	327

Chapter 8 Electrophilic Aromatic Substitution	329–365
8.1 General View—The Arenium Ion—The Arenium Ion Mechanism—S _E 2 Reaction	329
8.2 Electrophilic Substitution on Monosubstituted Benzenes—Orientation and Reactivity	340
8.3 Electrophilic Substitution in Naphthalene and Larger Polycyclic Aromatic Hydrocarbons	352
8.4 Attack of the Electrophile at a Carbon already Bearing a Substituent (<i>Ipso</i> Position)— <i>Ipso</i> Substitution	353
8.5 Aromatic Rearrangements	355
8.6 Some Name Reactions	357
8.7 Electrophilic Substitution on Heteroaromatic Compounds	358
8.8 Diazonium Coupling	361
<i>Problems</i>	362
<i>Answers to the Problems</i>	363
 Chapter 9 Aromatic Nucleophilic Substitution	 366–379
9.1 The S _N Ar Mechanism—The Addition—Elimination Mechanism—The General Nucleophilic Aromatic <i>Ipso</i> Substitution	366
9.2 The S _N 1 Mechanism in Nucleophilic Aromatic Substitution—The Aryl Cation Mechanism—Diazonium Salts	369
9.3 Nucleophilic Aromatic Substitution by Elimination—Addition—The Benzyne Mechanism	370
9.4 Benzyne—A Strained Cycloalkyne	373
9.5 Nucleophilic Substitution of Pyridine—The Chichibabin Reaction	376
9.6 Nucleophilic Substitution to Arenechromium Carbonyl Complexes	376
<i>Problems</i>	378
<i>Answers to the Problems</i>	378
 Chapter 10 Photochemistry	 380–420
10.1 Absorption of Electromagnetic Radiation—Quantum Yield	380
10.2 Excited States	381
10.3 The Fate of the Molecule in S ₁ and T ₁ States (Jablonski Diagram)	381
10.4 Energy Transfer	383
10.5 Energy Transfer and Photosensitization	383
10.6 Forbidden Transitions—Intersystem Crossing	384
10.7 Photochemical Reactions	385
<i>Problems</i>	415
<i>Answers to the Problems</i>	417

Chapter 11 Addition to Carbon-Carbon and Carbon-Hetero Multiple Bonds 421–437

11.1 Addition of Electrophiles to a Multiple Bond	421
11.2 Nucleophilic Additions to Alkenes and Alkynes	432
11.3 Addition of Carbenes	433
11.4 Nucleophilic Additions to Carbonyl Compounds (Aldehydes and Ketones)	434
11.5 Nucleophilic Additions to the Carbonyl Carbon of a Carboxylic Acid Derivative	435
11.6 Radical Additions to Alkenes	436
11.7 Nucleophilic Attack on Carbon-Nitrogen Triple Bond	436
<i>Problems</i>	437
<i>Answers to the Problems</i>	437

Chapter 12 Elimination Reactions 438–461

12.1 The Bimolecular Mechanism for Elimination—E2 Process	439
12.2 The Unimolecular Mechanism for Elimination—E1 Process	451
12.3 Pyrolytic <i>syn</i> Elimination—Ei—Elimination Internal	454
<i>Problems</i>	458
<i>Answers to the Problems</i>	459

Chapter 13 Oxidation Methods 462–499

13.1 Oxidation of Alcohols to Aldehydes, Ketones or Carboxylic Acids	462
13.2 Allylic Oxidation of Alkenes	469
13.3 Oxidation of Saturated C—H Groups	470
13.4 Addition of Oxygen at Carbon-Carbon Double Bonds	474
13.5 Ozonolysis	485
13.6 Cleavage of Glycols and Related Compounds	486
13.7 Oxidation of Alkenes to Aldehydes and Ketones Catalysed with Palladium and Oxidation of Alkylboranes	488
13.8 Oxidation of Ketones	490
13.9 Oxidation of α -Ketols	493
13.10 Oxidative Decarboxylation of Acids	493
13.11 Aromatic Rings of Phenols—Coupling	494
13.12 Oxidation of Amines	495
13.13 Photooxidation of Alkenes	495
<i>Problems</i>	496
<i>Answers to the Problems</i>	498

Chapter 14 Reduction Methods	500–542
14.1 Catalytic Reduction-Reduction with Diimide and Hydroboration	501
14.2 Reduction by Dissolving Metals—Metal and Ammonia	510
14.3 Addition of Hydrogen and Reductive Coupling of Carbonyl Compounds—Dissolving Metal Reductions	515
14.4 Reductive Removal of Functional Groups and Reductive Fission—Hydrogenolysis	516
14.5 Reductive Deoxygenation of Carbonyl Groups	519
14.6 Reduction by Hydride Transfer Reagents	522
14.7 Stereoselectivity of Reduction with Small Hydride Donors	529
14.8 Stereoselectivity of Reduction with Hindered Hydride Donors—Selectride	531
14.9 Chiral Boranes—Enantioselective Reduction of Carbonyl Compounds	533
14.10 Meerwein-Ponndorf Reduction—The Hydride Transfer Reaction	534
14.11 Cannizzaro Reaction	535
14.12 Reduction of Aldehydes and Ketones with an Adjacent Stereocenter (Asymmetric Induction)	535
14.13 Reduction of Epoxides	537
14.14 Reductions with Enzymes—Bakers Yeast	538
14.15 Less Reactive Modified Borohydrides—Sodium Cyanoborohydride and Sodium Triacetoxyborohydride	539
<i>Problems</i>	541
<i>Answers to the Problems</i>	541
 Chapter 15 Molecular Rearrangements	 543–568
15.1 Rearrangements to Electron Deficient Carbon	545
15.2 Rearrangements to Electron Deficient Nitrogen	554
15.3 Rearrangements to Electron Deficient Oxygen	559
15.4 Rearrangement to Electron Rich Carbon	560
15.5 Aromatic Rearrangements	565
15.6 Free Radical Rearrangements	566
<i>Problems</i>	566
<i>Answers to the Problems</i>	567
 Chapter 16 Free Radical Reactions	 569–604
16.1 Structure, Stability and Geometry	569
16.2 Preparation	569
16.3 Properties of Free Radicals	574

16.4 Aromatic Nucleophilic Substitution—S _{RN} 1 Substitution	588
16.5 Homolytic Aromatic Substitution	589
16.6 Some Name Reactions	590
16.7 The Coupling of Alkynes	595
16.8 Reactions Involving Electron Transfer Steps	596
16.9 Molecular Rearrangements	597
16.10 Some Further Substitution and Other Reactions	599
<i>Problems</i>	602
<i>Answers to the Problems</i>	603
 Chapter 17 Pericyclic Reactions	 605–682
17.1 Conservation of Molecular Orbital Symmetry	608
17.2 Methods to Explain Pericyclic Reactions	608
17.3 Electrocyclic Reactions (FMO-Approach)	609
17.4 Cycloadditions (FMO-Approach)	630
17.5 1, 3-Dipolar Cycloadditions	644
17.6 Cheletropic Reactions	645
17.7 Sigmatropic Rearrangements	647
17.8 The ENE Reaction	663
17.9 Aromatic Transition States	664
17.10 Möbius-Hückel Analysis (PMO) Approach	665
17.11 Correlation Diagram Method	671
<i>Problems</i>	676
<i>Answers to the Problems</i>	679
 References and Further Reading	 683-684
Index	685-693