

1. Record Nr.	UNINA9910488703103321
Autore	Yadav V. K.
Titolo	Steric and stereoelectronic effects in organic chemistry / / Veejendra K. Yadav
Pubbl/distr/stampa	Cham, Switzerland : , : Springer, , [2021] ©2021
ISBN	3-030-75622-X
Edizione	[2nd ed.]
Descrizione fisica	1 online resource (271 pages)
Disciplina	541.223
Soggetti	Stereochemistry Chemistry, Organic
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Intro -- Preface to the Second Edition -- Summary of Second Revised Edition -- Contents -- About the Author -- 1 Steric and Stereoelectronic Control of Molecular Structures and Organic Reactions -- 1 Influence of Steric Effects on Structures -- 2 Influence of Stereoelectronic Effects on Reactions -- 3 Evaluation of the Numerical Value of Anomeric Effect -- 4 Influence of Anomeric Effect on Conformational Preferences -- 5 Influence of Anomeric Effect on Conformational Reactivity -- 6 Conformations of Mono and Dithioacetals -- 7 Conformations of Mono and Diazaacetals -- 8 Antiperiplanar Effects Arising from C-Si, C-Ge, C-Sn, and C-Hg Bonds -- References -- 2 Reactions on Saturated and Unsaturated Carbons -- 1 Inter- and Intramolecular Reactions on Saturated Carbons -- 2 Intermolecular Reactions of Epoxides -- 3 Intramolecular Reactions of Epoxides -- 4 Baldwin Rules for Ring Closure on Saturated and Unsaturated Carbons -- 5 SN2' Reaction (Reaction on Unsaturated Carbon) -- 6 SN2 Reaction of Cyclopropane Activated by Two Geminal Carbonyl Groups -- 7 Reactions Involving Consecutive Intramolecular SN2 Reactions Leading to Rearrangement -- 8 Dual Activation for Skeletal Rearrangement -- 9 Solvolysis with Neighboring Group Participation -- 10 Rearrangement Originating from Oxirane Under Lewis Acid Condition -- 11 Rearrangement via Classical Versus Nonclassical Carbocations -- 12 Tandem Skeletal Changes and Polyene

Cyclization -- 13 Application of 5-Exo-Trig Cyclization Rule -- 14
Stereocontrol in Multi-cyclization Reactions -- 15 Reaction on sp Carbons -- 16 Stereoelectronic Control in Beckmann Rearrangement -- 17 Stereoelectronic Control in Curtius Rearrangement -- References -- 3 Diastereoselectivity in Organic Reactions -- 1 Introduction -- 2 Cram's Model for Asymmetric Synthesis -- 3 Anh-Felkin Modification of Cram's Model for Asymmetric Synthesis.
4 Cieplak's Model for Diastereoselectivity -- 5 Houk's Transition State and Electrostatic Models for Diastereoselectivity -- 6 Cation Coordination Model (* Model) for Diastereoselectivity -- 5-Aza-2-Adamantanone, 18 -- N-Methyl-5-Aza-2-Adamantanone, 19 -- 5-Aza-2-Adamantanone N-Oxide, 20 -- 5-Bora-2-Adamantanone, 21 -- 2,3-Endo,Endo-Dimethylnorbornan-7-One and the Corresponding Diethyl Analog -- 4-Oxatricyclo[5.2.1.02,6]Decan-10-One, 9, and 4-Oxatricyclo[5.2.1.02,6]Dec-8-En-10-One, 10 -- Trans-2-Heterobicyclo[4.4.0]Decan-5-Ones -- 3-Halocyclohexanones -- References -- 4 A(1,2) and A(1,3) Strains -- 1 Introduction -- 2 A(1,2) Strain -- 3 Stereocontrol in Reactions on Account of A(1,2) Strain -- 4 A(1,3) Strain -- 5 Stereocontrol in Reactions on Account of A(1,3) Strain -- 6 A(1,3) Strain in Amides and Its Consequences on Diastereoselectivity -- References -- 5 The Conservation of Orbital Symmetry Rules (Woodward-Hoffmann Rules) -- 1 Introduction -- 2 Orbitals and Symmetry Considerations -- 3 2 + 2 Reaction -- 4 Electrocyclic Ring Closure and Ring Opening Reactions -- 1,3-ButadieneCyclobutene -- 1,3,5-Hexatriene1,3-Cyclohexadiene -- 5 Diels-Alder Cycloaddition Reaction (4 + 2 Reaction) -- References -- 6 The Overlap Component of the Stereoelectronic Effect vis-a-vis the Conservation of Orbital Symmetry Rules -- 1 Introduction -- 2 Steric Effects in the Thermal Fragmentation of cis-3,6-Dimethyl-3,6-Dihydropyridazine -- 3 Orbital Overlap Effects in the Thermal Fragmentation of Cyclopropanated and Cyclobuanated cis-3,6-Dimethyl-3,6-Dihydropyridazine -- 4 Orbital Overlap Effects in [1,5] Sigmatropic Shifts -- 5 Difficulties Experienced with [1,5]-Sigmatropic in the Cyclobutanated Species -- References -- 7 Torquoselectivity of Conrotatory Ring Opening in 3-Substituted Cyclobutenes -- 1 Activation Barrier Approach to Torquoselectivity.
2 TS-NBO Approach to Torquoselectivity -- 3 Restricted Conformational Effects on Torquoselectivity -- 4 Global Conformational Effects on Torquoselectivity -- References -- 8 Hammett Substituent Constants -- 1 Hammett Substituent Constants for Benzoic Acids (m and p) -- 2 Hammett Substituent Constants for Phenylacetic and 3-Arylpropionic Acids -- 3 Hammett Substituent Constants and Free Energy Assessment -- 4 Hammett Substituent Constants and Reaction Pathway Relationship -- 5 Hammett Substituent Constants + and -- 6 Hammett Substituent Constants and Ester Hydrolysis Mechanism -- References -- 9 Relative Aromaticity of Pyrrole, Furan, Thiophene and Selenophene, and Their Diels-Alder Stereoselectivity -- 1 Introduction -- 2 Heteroatom Lone Pair Interaction with Ring Bonds in the Ground State -- 3 DA Reactions of Pyrrole, Furan, Thiophene, and Selenophene with MA -- 4 DA Reactions of Cyclopentadiene, Silole, and Germole with MA -- 5 DA Reactions of Cyclopentadiene, Silole, and Germole with Acetylene-1,2-Bisnitrile and Acetylene -- 6 DA Reactions of 1,3-Cyclohexadiene and 1,3-Cycloheptadiene with MA -- 7 DA Reactions of 1,3-Cyclohexadiene and 1,3-Cycloheptadiene with Acetylene-1,2-Bisnitrile and Acetylene -- 8 DA Reactions of 1,3-Cyclohexadiene and 1,3-Cyclooctadiene-6-Yne with Acetylene-1,2-Bisnitrile and Acetylene -- 9 Evaluation of Allylic Interaction in DA Reactions of Acyclic Dienes -- 10 DA Reactions of 6-Oxa-, 6-Aza-, 6-

Thia-, and 6-Selena-1,3-Cycloheptadienes with MA -- 11 DA
Reactions of 2,3-Cyclopropano-, 2,3-Cyclobutano-, and 2,3-Cyclopentano-6-Oxa-1,3-Cycloheptadienes with MA -- 12 DA
Reactions of Benzene, Pyridine, and 1,4-Diazine with Acetylene-1,2-Bisnitrile and Acetylene -- 13 DA Reactions of Naphthalene, 1-Azanaphthalene, and 1,4-Diazanaphthalene with Cyclopropene.
14 DA Reactions of Anthracene, 9-Azaanthracene, and 9,10-Diazaanthracene with Cyclopropene -- 15 DA Reactions of Benzene, Naphthalene, and Anthracene with Acetylene-1,2-Bisnitrile -- 16 Deformation Energy Considerations in DA Reactions of Five-Membered Heterocycles with Acetylene-1,2-Bisnitrile -- 17 DA Reactions of Thiophene 1,1-Dioxide with MA -- 18 Reaction Profile and Solvent Effects on Diastereoselectivity of DA Reactions of Five-Membered Heterocycles with MA -- References -- 10 Miscellaneous -- 1 Spiroconjugation -- 2 Periselectivity -- 3 Ambident Nucleophiles -- 4 Ambident Electrophiles -- , -Unsaturated Carbonyl Compounds -- Aromatic Electrophiles -- Unsymmetrical Anhydrides -- Arynes -- 5 -Effect -- 6 Carbenes -- 7 Hammond Postulate -- 8 Curtin-Hammett Principle -- 9 Diastereotopic, Homotopic, and Enantiotopic Substituents -- 10 Captodative Effect -- References -- Questions.
