1. Record Nr. UNINA9910483055503321

Titolo	Encyclopedia of Sustainability Science and Technology [[electronic resource] /] / edited by Robert A. Meyers
Pubbl/distr/stampa	New York, NY : , : Springer New York : , : Imprint : Springer, , 2012
ISBN	1-4419-0851-X
Edizione	[1st ed. 2012.]
Descrizione fisica	1 online resource (5790 illus., 3613 illus. in color. eReference.)
Disciplina	503
Soggetti	Sustainable development Engineering Energy Pollution Chemistry Medicine Sustainable Development Engineering, general Energy, general Pollution, general Chemistry/Food Science, general Medicine/Public Health, general
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Bibliographic Level Mode of Issuance: Monograph
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Air Pollution Sources, Statistics and Health Effects: Animal Breeding and Genetics for Food Production -- Batteries: Climate Change Mitigation -- Climate Change Modeling Methodology: Crop Science and Technology, Earth System Monitoring (Global Earth Observation System), Ecological Systems -- Electric, Hybrid and Fuel Cell Vehicles -- Environmental Radioactivity and Ecotoxicology of Radioactive Substances -- Environmental Toxicology: Fossil Fuels, Fossil Fuel Electric Power Stations, Fresh Water Resources, Water Purification and Desalinization -- Fuel Cells Science and Technology: Geoenvironmental Engineering, Geothermal Power Stations -- Green Chemistry and Chemical Engineering: Hazardous Waste Characterization and Disposal,

Hydrogen Production Science and Technology, Infectious Diseases Science and Technology, Intelligent Vehicles Technology, Mass Transit Science and Technology -- Nuclear Energy: Ocean Energy, Ocean Farming and Sustainable Aquaculture Science and Technology -- Oceans and Human Health, Photovoltaics -- Renewable Energy From Biomass -- Soil and Groundwater Pollution and Remediation -- Solar Radiation (Solar Insolation): Solar Thermal Energy, Solid Waste Disposal and Recycling, Sustainable Built Environment -- Sustainable Landscape Design and Green Roof Science and Technology -- Transgenic Livestock for Food Production -- Transport and Fate of Chemicals in the Environment: Transport Electrical Transmission Systems and Smart Grids, Waste to Energy, Wind Power.

Sommario/riassunto

The Encyclopedia of Sustainability Science and Technology (ESST) addresses the grand challenge for science and engineering today. It provides unprecedented, peer-reviewed coverage in more than 550 separate entries comprising 38 topical sections. ESST establishes a foundation for the many sustainability and policy evaluations being performed in institutions worldwide. An indispensable resource for scientists and engineers in developing new technologies and for applying existing technologies to sustainability, the Encyclopedia of Sustainability Science and Technology is presented at the university and professional level needed for scientists, engineers, and their students to support real progress in sustainability science and technology. Although the emphasis is on science and technology rather than policy, the Encyclopedia of Sustainability Science and Technology is also a comprehensive and authoritative resource for policy makers who want to understand the scope of research and development and how these bottom-up innovations map on to the sustainability challenge.

2. Record Nr. UNINA9910798672103321

Autore	Morrow Gary W. <1951->
Titolo	Biorganic synthesis : an introduction / / Gary W. Morrow
Pubbl/distr/stampa	New York, New York : , : Oxford University Press, , 2016 ©2016
ISBN	0-19-062734-4 0-19-756322-8 0-19-986052-1
Descrizione fisica	1 online resource (xxi, 429 pages) : illustrations
Collana	Oxford scholarship online
Disciplina	572/.45
Soggetti	Organic compounds - Synthesis Biosynthesis Chemistry, Organic
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Previously issued in print: 2016.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Introduction -- The Unique Role of Carbon -- Distinguishing Primary Versus Secondary Metabolism -- Secondary Metabolites and Natural Products -- Natural Products in Organic Chemistry and Medicine -- The Organic Chemistry of Biosynthesis -- Goals and Structure of This Book -- Review of Functional Groups, Stereochemistry, and Conformational Analysis -- Prochiral Relationships: One Step from Chirality -- Prochiral it-Systems: "Two-Faced" Reaction Centers -- Diastereotopic Atoms and Groups: One Step from a Diasteroeomer -- Monosubstituted Cyclohexanes: Favoring Equatorial Positions -- Disubstituted Cyclohexanes: Equivalent and Nonequivalent Combinations -- Bicyclic Systems: Joining of Rings -- Heterocyclic Ring Systems: One Atom Makes All the Difference -- Bond Making and Breaking: Have Pair, Will Share; Need Two from You -- Bronsted Acid-Base Reactions: Proton Donors Gladly Accepted -- Acidity Trends: Why that Proton Is or Isn't Acidic -- Carbocations: Three Bonds to Carbon Can Be a Plus -- Radicals: Odd and Reactive -- Elimination Reactions: Introducing the Carbon-Carbon n-Bond -- Carbocations: Rearrangements and Fates -- Electrophilic Additions: n-Bonds as Nucleophilic Agents -- Nucleophilic

Substitutions and Alkylations: Make or Break for C-X Bonds -- Nucleophilic Carbonyl Addition Reactions: C=O n-Bond under Attack -- Imine Formation: Making the Essential C=N Linkage -- Nucleophilic 1,4-(Conjugate) Addition Reactions: Remote Attack on Conjugated Carbonyls -- Nucleophilic Acyl Substitution Reactions: Turning One Acyl Compound into Another -- Looking Ahead -- Study Problems -- Enzymes: The Catalysts of Biological Organic Chemistry -- Cofactors: Enzyme Assistants in Bioorganic Reactions -- NADH/NADPH: Nature's Version of Sodium Borohydride for Carbonyl Reduction -- NAD+/NADP+: Nature's Version of PCC for Alcohol Oxidation -- FAD: Another Hydride Acceptor for Dehydrogenations -- The Significance of the Anomeric Carbon: Glycoside Formation -- UDP-Sugars and Glycoside Formation: SN2 Chemistry at Work -- Organic Reactions in Carbohydrate Chemistry: Overview of Glucose Metabolism -- Glycolysis: A 10-Step Program -- What Happens to the Pyruvic Acid from Glycolysis -- The Citric Acid Cycle: Another 10-Step Program -- The Pentose Phosphate Pathway: Seven Alternative Steps to Some Familiar Intermediates -- The Big Picture -- Amino Acids: More Important Primary Metabolite Building Blocks for Biosynthesis -- Biosynthesis of Serine: A Good Place to Start -- Peptides and Proteins: A Very Brief Review -- Putting Proteins and Carbohydrates Together: Glycoproteins Versus Protein Glycosylation -- Looking Ahead -- Study Problems -- Classification of Terpenes: How Many Isoprene Units? -- The Mevalonic Acid Route to DMAPP and IPP -- The Deoxyxylulose Phosphate Route to IPP and DMAPP -- Hemiterpenes: Just One Isoprene Unit -- Monoterpenes (C10) and Isoprene Linkage: Heads, IPP Wins; Tails, DMAPP Loses -- Geranyl PP to Neryl PP via Linalyl PP: The Importance of Alkene Stereochemistry -- Some Acyclic Monoterpenes and Their Uses -- Mono- and Bicyclic Monoterpenes via Cationic Cyclizations and Wagner-Meerwein Shifts -- What's that Smell? Limonene Derivatives as Flavor and Fragrance Compounds -- Irregular Monoterpenes: If Not Head-to-Tail, then How? -- Iridoids: From Catnip to Alkaloids -- Sesquiterpenes (C15): Linking of Different Starter Units -- Some FPP Cyclizations in Sesquiterpene Biosynthesis -- Trichodiene and the Trichothecenes: How to Trace a Rearrangement Pathway -- Diterpenes (C20): Taking it to the Next Level of Molecular Complexity and Diversity -- Cyclic Diterpenes: From Baseball and Plant Hormones to Anticancer Drugs -- Sesterterpenes (C25): Less Common, More Complex -- Triterpenes and Steroids: Another Case of Irregular Linkage of Terpene Units -- Oxidosqualene and Steroid Biosynthesis: Cyclization to Lanosterol and Beyond -- Conversion of Lanosterol (C30) to Cholesterol (C27): Where Did the Carbons Go? -- Conversions of Cholesterol: Production of the Sex Hormones -- Dehydrocholesterol, Sunshine, and Vitamin D3 Biosynthesis -- Tetraterpenes and Carotenoids: Tail-to-Tail Linkage of C20 Units -- Looking Ahead -- Study Problems -- Fatty Acids: Multiples of Two Carbons, Saturated or Unsaturated -- Saturated Fatty Acid Biosynthesis: It All Starts with Acetyl-CoA -- Branched Fatty Acids: Different Routes and Different Results -- Mono- and Polyunsaturated Fatty Acids: Putting in the "Essential" Double Bonds -- Aerobic Versus Anaerobic Routes to Desaturation -- Further Desaturation of Fatty Acids: Triple Bonds and Rings -- Prostaglandins, Thromboxanes, and Leukotrienes: The Power of Oxygenated FAs -- Polyketide Biosynthesis: More Starter Units and Extender Units, but with a Twist -- Aromatic Polyketide Natural Products: Phenols and Related Structures -- Isotopic Labeling Studies: Biosynthetic Insights via 13C NMR -- Further Modification of Polyketides: Alkylations, Oxidations,

Reductions, and Decarboxylations -- Other Oxidative Modifications of Aromatic Rings: Expansion or Cleavage Processes -- Oxidative Coupling of Phenols: Formation of Aryl-Aryl Bonds -- The Use of Other Starter Groups: From Cancer Drugs and Antibiotics to Poison Ivy -- More on Polyketide Synthase (PKS) Systems: Increasing Product Diversity -- Modular Type I PKS Complexes and Macrolide Antibiotics: Erythromycin Biosynthesis -- Genetic Manipulation of Modular PKS Systems: Rational Drug Modification -- Some Final PKS Products of Medicinal Importance -- Looking Ahead -- Study Problems -- What Is Shikimic Acid? -- Shikimic, Chorismic, and Prephenic Acids at the Heart of the Pathway -- The Claisen Rearrangement: Allyl Vinyl Ethers in a Chair --
Conversion of Chorismic Acid to Prephenic Acid -- Conversion of Prephenic Acid to Phenylalanine or Tyrosine -- More Uses for Chorismic Acid -- Shikimic Acid Pathway Products from Phenylalanine and Tyrosine: An Overview -- Phenylpropanoids: A Large Family of Phenyl C3 Compounds -- Phenylpropanoids: Reduction of Acids to Phenyl C3 Aldehydes and Alcohols -- Reduction of Phenyl C3 Alcohols to Phenylpropenes -- Lignans and Lignin: Oxidative Phenolic Coupling with a Twist -- Coniferyl Alcohol Oxidative Coupling: Allyl C-Radical + Allyl C-Radical -- Coniferyl Alcohol Oxidative Coupling: Ortho C-Radical + Allyl C-Radical -- Coniferyl Alcohol Oxidative Coupling: O-Radical + Allyl C-Radical -- Lignin: A Plant Polymer and Major Source of Carbon -- Podophyllotoxin Biosynthesis: Aryltetralin Lignans from the American Mayapple -- Cleavage of Cinnamic Acids to Phenyl Cl Compounds: Different Routes, Similar Outcomes -- Coumarins: Sweet-Smelling Benzopyrones --
Combining the Shikimate, Polyketide, and Terpenoid Pathways -- Kavalactones: Natural Sedatives from the South Pacific -- Flavonoids: Structurally Diverse Plant Polyphenolics -- The Chalcone-to-Flavanone-to-Flavone Sequence: Formation of Apigenin -- The Flavanone-to-Dihydroflavonol-to-Anthocyanin Sequence: Formation of Pelargonidin -- The Flavanone-to-Isoflavanone-to-Isoflavone Sequence: Formation of Genistein -- Isoflavanoid Structural Modifications: Production of Antimicrobial Phytoalexins -- Rotenoids: Fish Poisons from Isoflavones -- Looking Ahead -- Study Problems -- Alkaloid Structure: The Importance of N-Heterocycles -- Alkaloids Not Derived from Amino Acids: Amination Reactions, Poisons, and Venoms -- Amino Acids and Mannich Reactions: Important Keys to Alkaloid Biosynthesis -- Alkaloids from Ornithine: Tropanes via the Mannich Reaction in Action -- Pyrrolizidine Alkaloids: Poison Plants and Insect Defense --
Piperidine-Type Alkaloids Derived from Lysine -- Quinolizidine Alkaloids: Livestock Poisons from Cadaverine -- Alkaloids from Phenylalanine: From Neurotransmitters to Decongestants and Narcotics -- Alkaloids from Tyrosine: The Pictet-Spengler Reaction in Alkaloid Biosynthesis -- (S)-Reticuline: A Versatile Pictet-Spengler-Derived Benzyltetrahydroisoquinoline -- Oxidative Coupling in Alkaloid Biosynthesis: Biosynthesis of Corytuberine and Morphine -- The Morphine Rule -- Alkaloids from Tryptophan: Adventures in Indole Alkaloid Structural Complexity -- Pictet-Spengler-Type Reactions of Tryptamine: p-Carbolines and Indole Terpene Alkaloids -- Alkaloids from Nicotinic Acid: Toxic Addictive Derivatives of a Common Nutrient -- Alkaloids from Anthranilic Acid: From Tryptophan to Quinolines and Acridines -- Alkaloids from Histidine: From Simple Amides to Glaucoma Drugs -- Purine Alkaloids: Addictive Stimulants in our Coffee, Tea, and Chocolate --
Cyclic and Macrocyclic Peptides: From Sweeteners to Antibiotics and Beyond -- Penicillins, Cephalosporins, and Carbapenums: The Essential

p-Lactam Antibiotics -- A Final Look Ahead -- Study Problems -- Why We Synthesize Organic Compounds -- Synthetic Challenges: Total Synthesis -- Synthetic Challenges: Semisynthesis -- Synthetic Challenges: Biomimetic Synthesis -- Synthetic Challenges: Structural Revision or Confirmation -- Synthetic Challenges: Formal Synthesis -- Synthetic Challenges: Stereoselective Synthesis of Optically Pure Compounds -- Resolution of Enantiomers to Obtain Optically Pure Compounds -- Use of Chiral Pool Compounds for Synthesis of Optically Pure Natural Products -- Use of Chiral Reagents for Synthesis of Optically Pure Compounds -- Use of Chiral Substrate Control for Stereoselective Synthesis -- Use of Chiral Auxiliaries for Synthesis of Optically Pure Compounds -- Use of Chiral Catalysis for Synthesis of Optically Pure Compounds -- Use of Enzymes for Synthesis of Optically Pure Compounds: Biocatalysis -- Some Final Thoughts -- Study Problems.

Sommario/riassunto

New elective courses at the undergraduate level that address topics crossing the traditional boundaries of chemistry and biology are increasingly necessary, as are courses that can provide traditional chemistry students with additional insight into the fundamental role that chemistry plays in the function and evolution of biological systems. This text builds on the foundation of a one-year introductory course in organic chemistry, focusing on familiar organic chemical processes associated with the biosynthesis of primary and secondary metabolites, with special emphasis on the latter group.