1. Record Nr. UNINA9911021150003321

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Titolo	Photocatalysis for Heterocycle Formation and Functionalisation / / edited by Wen-Jing Xiao
Pubbl/distr/stampa	Cham : , : Springer Nature Switzerland : , : Imprint : Springer, , 2025
ISBN	3-031-95005-4
Edizione	[1st ed. 2025.]
Descrizione fisica	1 online resource (256 pages)
Collana	Topics in Heterocyclic Chemistry, , 1861-9290 ; ; 62
Disciplina	540
Soggetti	Chemistry Photocatalysis Materials Catalysis Heterogeneous catalysis Catalysts Heterogeneneous Catalysis Catalyst Synthesis
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Recent advances in photoinduced radical cascade enabling five membered n heterocycles formation -- Photoredox catalyzed asymmetric functionalization of pyridine derivatives -- Photoinduced C H functionalization of pyridine derivatives with N functionalized pyridinium salts -- Photo induced Synthesis of Imidazopyridines and Imidazothiazoles -- Photoinduced Wolff rearrangement for synthesizing chiral heterocycles -- Heterocycle Synthesis through Photochemical Transformation of 2H azirines -- Photo driven dearomatization of heteroarenes via energy transfer -- Arylation of Heterocycles Enabled by Photocatalysis -- Photocatalytic synthesis and functionalization of fused thiophenes -- Visible light driven construction of axially chiral heterocyclic compounds -- Biocatalytic synthesis and functionalization of heterocyclic compounds fueled by light.
Sommario/riassunto	Heterocyclic compounds are an important class of organic chemicals that feature one or more heteroatoms in their ring systems. Such

compound class have played an important role in our daily lives, as they are ubiquitous in natural products, pharmaceuticals, and other biologically active molecules. Many heterocyclic scaffolds have been identified as privileged structural units in pharmacologically active compounds. According to statistics, more than 90% of novel pharmaceuticals contain at least one heterocycle. Advances in modern synthetic techniques, such as organocatalytic cycloadditions, metal-catalyzed cross-coupling reactions, have offered many efficient and rapid approaches for assembly of diverse heterocycles of various ring sizes. However, given increasing need for expansion of the available drug-like chemical space and from both environmental and economical viewpoints, it is still highly desirable to develop new efficient and practical methodologies toward heterocycle synthesis and functionalization under “green and sustainable” conditions. Photocatalysis is emerging as a powerful tool to access diverse high-energy intermediates in a controlled and selective fashion, and capable of promoting numerous challenging bond formation and novel chemical transformation. This re-merging catalytic strategy fits with green chemistry principles and has significantly spurred many innovative approaches that use of low energy photons as a controllable energy source to enable heterocycle formation and functionalization under mild conditions. In this book, we have tried to cover some interesting aspects of the development of photocatalytic reactions that are aimed to construct diverse heterocyclic compounds. Specifically, this major content is devoted to the following research topics, including N-heterocycle formation (Chapters 1, 4, and 6), functionalization of N-heterocycles (Chapters 2, 3, and 8), chiral heterocycle formation (Chapter 5), dearomatization of heterocycles (Chapter 7), fused thiophene formation and functionalization (Chapter 9), construction of axially chiral heterocyclies (Chapter 10), and photoinduced biocatalytic heterocycle formation (Chapter 11). It is our hope that this book, in addition to being of interest to practitioners of medicinal chemistry and organic synthesis who need an introduction to this area, will also be found inspiriting and stimulating by undergraduate and graduate students.