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Nota di contenuto	Abstract -- Introduction to Photocatalysis -- Dual Gold and Visible Light Photoredox-Catalyzed Heteroarylations of Non-Activated Alkenes -- Visible Light Photoredox Catalyzed Trifluoromethylation-Ring Expansion via Semipinacol Rearrangement -- Transition Metal Free Visible Light-Mediated Synthesis of Polycyclic Indolizines -- Synthesis and Characterizations of Novel Metal-Organic Frameworks (MOFs) -- Experimental Section.
Sommario/riassunto	This unique thesis discusses the development of conceptually novel and synthetically valuable methods that use visible light photocatalysis. Each chapter addresses a different topic in the emerging field of photocatalysis, which has become an indispensable tool for organic synthesis. Photocatalysis employs environmentally harmless and abundant visible light in the presence of a photosensitizer, and as such offers an attractive alternative to harmful UV light in photo-mediated reactions. This book introduces the novel concept of merging gold catalysis with visible light photocatalysis in a dual catalytic fashion, which demonstrates their compatibility with each other for first time and has inspired the development of various reactions. Moreover, a

novel trifluoromethylation method, which combines radical addition chemistry with a polar rearrangement to synthesize valuable fluorinated compounds, is presented, since compounds featuring fluorinated functionality are the subject of increasing attention in pharmaceutical, agrochemical and material research. It also develops an external photocatalyst-free photochemical method for the synthesis of valuable indolizine heterocycles, where the product mediates its own formation. Lastly, it describes the synthesis and characterization of two novel highly porous metal-organic frameworks (MOFs). The comprehensive text is rounded out with illustrations and color figures.