1. Record Nr. UNINA9910254057303321

Autore	Wang Xiaoshi
Titolo	A Novel Heme-Thiolate Peroxygenase AaeAPO and Its Implications for C-H Activation Chemistry / / by Xiaoshi Wang
Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2016
ISBN	3-319-03236-4
Edizione	[1st ed. 2016.]
Descrizione fisica	1 online resource (153 p.)
Collana	Springer Theses, Recognizing Outstanding Ph.D. Research, , 2190-5053
Disciplina	612.1111
Soggetti	Organic chemistry Enzymology Catalysis Organic Chemistry
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references at the end of each chapters.
Nota di contenuto	From the Contents: Hydrocarbon Oxygenation by Heme-Thiolate Enzymes -- Efficient and Selective Alkane Hydroxylation Reactions Catalyzed by the Fungal Peroxygenase AaeAPO -- Hydrocarbon Hydroxylations Catalyzed by AaeAPO: Evidence of Radical Intermediates and Kinetic Isotope Effects.
Sommario/riassunto	In this thesis, Xiaoshi Wang investigates the function and mechanism of a newly discovered heme-thiolate peroxygenase, AaeAPO. This enzyme class comes from Agrocybe aegerita and is used in the conversion of inert hydrocarbons to alcohols. Xiaoshi's work focuses on an extracellular P450 enzyme which is not limited in its stability and lack of solubility and therefore is relevant for widespread industrial use. The author demonstrates that the peroxygenase catalyzes a wide range of reactions. In some cases the author even describes very difficult transformations in molecules that are highly inert. Her detailed investigations provide a mechanistic framework for how the peroxygenase catalyzes such a large number of reactions. A major highlight of this thesis is the identification of key short-lived intermediates in the catalytic cycle of the peroxygenase, using rapid kinetic and spectroscopic methods, as well as the elucidation of the

thermodynamic properties of these high-energy intermediates. This work adds new insight into an important class of enzymes.