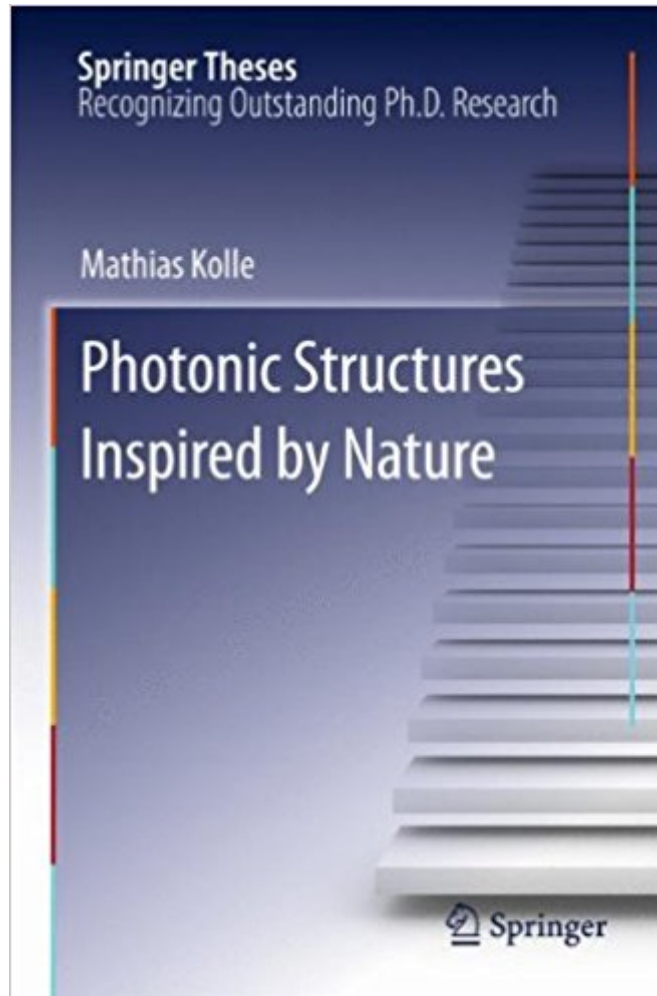




**Ebook Directory**  
the best source of ebook

The book was found

# Photonic Structures Inspired By Nature (Springer Theses)



## Synopsis

Unlike most natural colours that are based on pigment absorption, the striking iridescent and intense colouration of many butterflies, birds or beetles stems from the interaction of light with periodic sub-micrometer surface or volume patterns, so called "photonic structures". These "structural colours" are increasingly well understood, but they are difficult to create artificially and exploit technologically. In this thesis the field of natural structural colours and biomimetic photonic structures is covered in a wide scope, ranging from plant photonics to theoretical optics. It demonstrates diffractive elements on the petal surfaces of many flowering plant species; these form the basis for the study of the role of structural colours in pollinator attraction. Self-assembly techniques, combined with scale able nanofabrication methods, were used to create complex artificial photonic structures inspired by those found in nature. In particular, the colour effect of a *Papilio* butterfly was mimicked and, by variation of its design motive, enhanced. All photonic effects described here are underpinned by state-of-the-art model calculations.

## Book Information

Series: Springer Theses

Hardcover: 144 pages

Publisher: Springer; 2011 edition (January 10, 2011)

Language: English

ISBN-10: 364215168X

ISBN-13: 978-3642151682

Product Dimensions: 6.6 x 0.6 x 9.6 inches

Shipping Weight: 1 pounds (View shipping rates and policies)

Average Customer Review: 1.0 out of 5 stars 1 customer review

Best Sellers Rank: #5,032,714 in Books (See Top 100 in Books) #28 in Books > Science & Math > Biological Sciences > Bioelectricity #833 in Books > Science & Math > Physics > Nanostructures #1119 in Books > Science & Math > Biological Sciences > Biophysics

## Customer Reviews

Unlike most natural colours that are based on pigment absorption, the striking iridescent and intense colouration of many butterflies, birds or beetles stems from the interaction of light with periodic sub-micrometer surface or volume patterns, so called "photonic structures". These "structural colours" are increasingly well understood, but they are difficult to create artificially and exploit technologically. In this thesis the field of natural structural colours and

biomimetic photonic structures is covered in a wide scope, ranging from plant photonics to theoretical optics. It demonstrates diffractive elements on the petal surfaces of many flowering plant species; these form the basis for the study of the role of structural colours in pollinator attraction. Self-assembly techniques, combined with scalable nanofabrication methods, were used to create complex artificial photonic structures inspired by those found in nature. In particular, the colour effect of a *Papilio* butterfly was mimicked and, by variation of its design motive, enhanced. All photonic effects described here are underpinned by state-of-the-art model calculations.

The author uses figures to help explain observed phenomena, and many of these figures are so poorly reproduced that they are useless. Graphs have curves on them that can't be seen, probably because they were originally in color and are reproduced in black and white. Graphs are reduced in size to a point where you need a magnifying glass to view them. For example, one graph containing six curves is about 3/4 inch by 3/4 inch in size. If you want to learn about the mechanisms that produce structural color in nature, don't waste your money on this book. I recommend the book *Structural Colors in the Realm of Nature* by S. Kinoshita. It is about twice as long, has beautifully reproduced figures, and is about the same price.

[Download to continue reading...](#)

Photonic Structures Inspired by Nature (Springer Theses) Tunneling Dynamics in Open Ultracold Bosonic Systems: Numerically Exact Dynamics  $\hat{H}$   $\rightarrow$  Analytical Models  $\hat{H}$   $\rightarrow$  Control Schemes (Springer Theses) Structured Light Fields: Applications in Optical Trapping, Manipulation, and Organisation (Springer Theses) Standard Model Measurements with the ATLAS Detector: Monte Carlo Simulations of the Tile Calorimeter and Measurement of the Z  $\rightarrow$   $\mu^+\mu^-$  Cross Section (Springer Theses) Saami Inspired Bracelet Basics: How to make a Saami inspired pewter thread bracelet. (Saami Inspired Bracelets Book 1) Saami Inspired Bracelet Basics: How to make a Saami inspired pewter thread bracelet. (Saami Inspired Bracelets) Bringing Nature Home: Floral Arrangements Inspired by Nature Structural Dynamics of Electronic and Photonic Systems Physics of Photonic Devices Photonic Interconnects for Computing Systems: Understanding and Pushing Design Challenges (River Publishers Series in Optics and Photonics) Photonic Crystals: Molding the Flow of Light, Second Edition Optical Solitons: From Fibers to Photonic Crystals Selective Photonic Disinfection: A Ray of Hope in the War Against Pathogens Selective Photonic Disinfection: A Ray of Hope in the War Against Pathogens (IOP Concise Physics) Nano-Optics for Enhancing Light-Matter Interactions on a Molecular Scale: Plasmonics, Photonic Materials and Sub-Wavelength Resolution (NATO Science ... Security Series B: Physics and Biophysics) Photonic

Crystals and Light Localization in the 21st Century (Nato Science Series C:) Starting Out with Java:  
From Control Structures through Data Structures (3rd Edition) Design and Analysis of Composite  
Structures: With Applications to Aerospace Structures Introduction to Structures (Architect's  
Guidebooks to Structures) Anatomy of Orofacial Structures - Enhanced Edition: A Comprehensive  
Approach, 7e (Anatomy of Orofacial Structures (Brand))

[Contact Us](#)

[DMCA](#)

[Privacy](#)

[FAQ & Help](#)