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Katherine Creath
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Introduction

In the field of optical science and engineering there are many aspects of light we take for granted; yet, do we truly understand and appreciate the nature of light in the world around us? In the natural world there are many fascinating and beautiful effects involving optics. Most of the time we take these effects for granted. Each day optical scientists and engineers discover more about the natural world when we see how new technologies such as photonic crystals mimic the natural world. Photonic crystal-like structures in peacock feathers give the plumes their color. Similar structures in butterfly wing scales provide their iridescent colors.

Beyond these structures there are effects in the natural world such as the aurora borealis or things as everyday as rainbows and oil slicks. Polarization and color effects brighten up our world. When we look more closely we notice that plants glow and self-bioluminescence provides information about the state of health of organisms. We may even wonder why it is that parrots have a visual response much further into the ultraviolet than we do.

As optical scientists and engineers, most of us became fascinated with light at some point in our lives. We observe things in our everyday life that we don't often explore or think about, yet there are researchers who spend their careers looking at these effects in nature.

This conference is the fourth in a series of conferences on *The Nature of Light*, begun in 2005 with *The Nature of Light: What is a Photon?* (SPIE vol. 5866, 2005). Other volumes in the series include *The Nature of Light: Light in Nature* (SPIE vol. 6285, 2006) and *The Nature of Light: What are Photons?* (SPIE vol. 6664, 2007).

This year's conference *The Nature of Light: Light in Nature II* is comprised of 12 papers with authors from eight different countries providing a variety of research involving light in the natural world. The papers have been split into two sessions. Session 1 focuses on *Fundamental Properties of Light* while Session 2 focuses on *Light and Biological Systems*. Each of these papers offers its own perspective and provides some insight into the nature of light.

We enjoy having the opportunity to investigate these questions in a forum uniting optical scientists and engineers from all over the world. Come join us, and remember what it was like to be a child asking the question "What is light?"

Katherine Creath

