
Preface

There is an epidemic that has swept the entire nation—one that most are oblivious to. It is the epidemic of overly fast-paced, technology driven lives. Now, more than ever, Americans lead lives of busyness and constantly being on the run, with cell phones, email, and tablets at the ready.

At some point we have to wonder... Could we be eliminating something valuable from our lives with this kind of lifestyle? But, of course, just as soon as these thoughts form in our heads, they disappear at once as the phone chirps, and we grab it to see who texted us.

The truth is that there *are* many valuable things we ignore every day. In fact, there are a thousand, a billion, an *infinite* amount of things, perhaps right outside our windows or in the ponds near our houses. They may even be found amidst the mass of forest trees along the highway we took today on our commute to school or work, or in the park that we walked our dogs in. With such a rapid increase in the rate of technology usage, it is easy to forget nature, the master inventor.

But we always have the ability to stop, and truly look.

When we stare this deeply into nature's eyes, it takes our breath away, and in a good way, it bursts our bubble. We realize that all our inventions have already appeared in nature in a more elegant form and at a lot less cost to the planet. Our most clever architectural struts and beams are already featured in lily pads and bamboo stems. Our central heating and air-conditioning are bested by the termite tower's steady 86 degrees F. Our most stealthy radar is hard of hearing compared to the bat's multifrequency transmission. And our new 'smart materials' can't hold a candle to the dolphin's skin or the butterfly's proboscis. Even the wheel, which we always took to be a uniquely human creation, has been found in the tiny rotary motor that propels the flagellum of the world's most ancient bacteria.

—Janine M. Benyus, *Biomimicry: Innovation Inspired by Nature*

Nature is a bountiful source of inspiration and intelligence, and many have been using it for scientific exploration for ages. Such examples include gecko pads, lotus leaves, butterfly wings, sharks, and more. This book presents 13 different kinds of natural surfaces—many of which we can easily find near our houses—and their respective science and engineering values. The chapters in this book were written

by students in Professor Q. Jane Wang's Introduction to Tribology class taught at Northwestern University in Evanston, IL. USA. All passionate about nature, the contributing student authors strive to share their understanding with the communities around them.

After reading the fascinating examples of natural surfaces in the following pages, may you be inspired to slow down, get some fresh air, and discover for yourself all that nature has to offer.

Evanston, IL

Michelle Lee

Remarkable Natural Material Surfaces and Their
Engineering Potential

Lee, M. (Ed.)

2014, XIV, 163 p. 98 illus., 58 illus. in color., Hardcover

ISBN: 978-3-319-03124-8