

Tues, 4 Dec 2018 | 10am | DBS Conference Room 1

Hosted by A/P Antonia Monteiro

A tale of white and color



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Nature produces structural colours with a staggeringly diverse set of complex nanostructures, most often encountered in the wings of butterflies and beetles and the feathers of birds. The arrangement of materials in these structures reach an astonishing precision and is accurately reproduced within many individuals to a level that easily surpasses lab-based structures. By changing the dimensions of such nanostructures or the amount of order and disorder in these systems, these diverse nanostructures allow manipulation of incident electromagnetic radiation so to achieve colors that extend over the entire visible wavelength range and that are employed in courtship or to escape predation risk by camouflage. Here, I will present the optical properties of different biological photonic structures and discuss their biological function and the significance of these colors for technological applications.

Bodo Wilts is an Ambizione fellow of the Swiss National Science Foundation and a senior scientist at the Adolphe Merkle Institute in Fribourg, Switzerland. Prior to this post, he was a postdoctoral research associate in the Cavendish Laboratory at the University of Cambridge. He received his Ph.D. in 2013 from the Rijksuniversiteit Groningen in the Netherlands. His research focuses on the optical function, development, and design of biological and bioinspired photonic structures and polymer-templated plasmonic optical metamaterials.

