

Abstract Submitted
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Circularly-Polarized Light Signatures in Nature¹ DANIELA MARIN, Member, YITIAN DING, STANLEY PAU, None — Polarized light is ubiquitously found across the globe. Circularly polarized light (CPL) on the other hand, is seldom found. Traces of CPL have been detected in the reflection of the exoskeleton of certain species of beetles, bird feathers, and the lanterns of firefly larvae. The structure of the beetle cuticle can serve as a biological model for cholesteric liquid crystals, crystals that respond to stimuli with a change in color. Moreover, humans are not able to distinguish the differences between polarization states, but studies have shown that some animals exhibit polarization vision. This type of vision has the capability of producing light information used in contrast enhancement, camouflage breaking and object recognition. This project aimed to contribute to the understanding of CPL in the biological sciences and to further investigate the functionality of CPL in organisms. Many types of animals, plants, and landscapes were imaged, and it was found that CPL was absent in several species under the categories, reinforcing CPL's infrequent appearance in nature.

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