

Abstract Submitted
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Polarization Sensitive Coherent Diffraction Imaging for Insect Structures¹ HANNAH RICH, Department of Physics, New Mexico State University, DMITRY KARPOV, Department of Physics, New Mexico State University & Physical-Technical Institute, National Research Tomsk Polytechnic University, EDWIN FOHTUNG, Department of Physics, New Mexico State University & Los Alamos National Laboratory — Anisotropy in dielectric and multiferroic materials as well as in optically transparent oxides are being actively pursued by researchers due to their broad potential application as elements in photonics and sensor devices, and as template materials in energy storage and conversion devices. It is therefore vital to be able to probe the structure-property relationship in such materials. We report on an experimental setup to study the optical and functional properties of a bio-inspired multilayer structure. We use the concept of bio-mimetic of an insect wing that serves as a possible template material for photonic applications. We develop an experimental imaging technique that utilizes the interaction of polarized visible light with the insect wing. By mapping the response function of the complex polarized beam with the insect wings, we provide images of the changes of the complex index of refraction as a function of beam polarization.

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