

NETLINCS - New Trends in Linear and Non-Linear Spectroscopic Studies of Natural Chirality



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Mueller matrix polarimetry for chiral detection in the solid state

Wednesday, December 4, 2024 5:00 PM (40 minutes)

This presentation will review our recent progress studying chiral media with Mueller matrix polarimetry. A comprehensive presentation of our polarimetric method will be provided, detailing the instrumentation used, a few remarks about data analysis as well as some basic concepts about light propagation in chiral anisotropic media. We will discuss how optical characterization methods based only on circularly polarized light can often render inconclusive or erroneous results for chiral assessment. We will show that Mueller matrix spectroscopy and imaging techniques are suitable characterization tools to unveil the ever-growing complexity of anisotropic chiral media.

Mueller matrix polarimetry allows the measurement of circular dichroism (CD) together with other optical effects, e.g. linear birefringence, linear dichroism, and circular birefringence. These measurements are critical when studying the optical activity of supramolecular assemblies, nanomaterials, or, more in general, any solid-state system. Examples of chiroptical spectroscopy and chiroptical imaging based on complete polarimetry will be provided.

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