

Materials and methods for playing with circularly polarized light in devices

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Electronic circular dichroism (ECD) and circularly polarized luminescence (CPL) are the most prominent forms of discrimination of light circular polarization in the UV-vis-NIR. They have been used for decades to characterize and investigate the stereochemistry of molecules and of supramolecular systems. The most relevant figures of merit of ECD and CPL are g_{Abs} and g_{Em} , both limited to ± 2 . Thanks to the discovery of molecular and supramolecular systems with g -values approaching ± 2 , and to the development of organic semiconductors, we have observed a paradigm shift, by which ECD and CPL are no longer considered as mere spectroscopic properties, useful to characterize chemical systems, but rather as viable ways to fabricate devices for producing and detecting circularly polarized light.

In this presentation, we shall discuss families of molecules and self-assembling materials where $g_{\text{Abs}}/g_{\text{Em}}$ are very high and that lend themselves to the fabrication of optoelectronic devices.

We shall separately discuss the case where the *apparent* chiroptical properties appear opposite on the two faces of the same material, as if dealing with its two enantiomer and demonstrate the application of ECD imaging (ECDi) and of circularly polarized microscopy (CPM).

Literature

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