Electronic Supplementary Material (ESI) for Nanoscale.

Supplementary Information

Tailoring chiro-optical effects by helical nanowire arrangement

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I. Transmissions and polarization conversion spectra

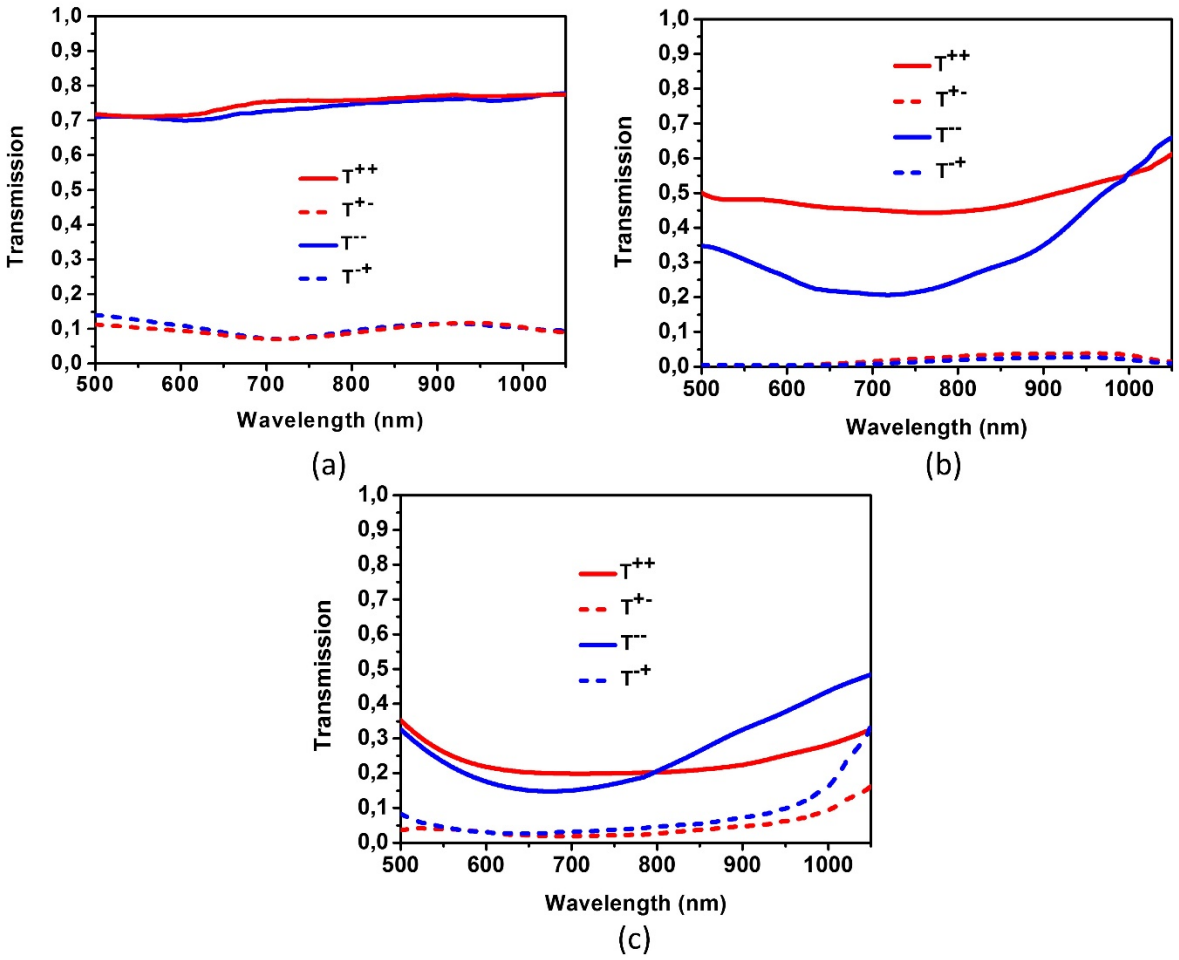

Fig.S1. Measured transmission spectra of the different components of transmitted light, T++, T+- and T--, T-+ for LCP and RCP, respectively, for (a) SHN, (b) THN and (c) CP-SHN arrays. The first index refers to the polarization of incident beam and the second index to the polarization of transmitted light.

II. Chiro-optical property dependence on the 3D spatial helical arrangement

By analyzing the chiral property dependence on the 3D helical arrangement in the SHN array, we observe that small LP values (500 nm) induce an enhancement of the g factor and maximum ORD values since the helix number per volume is increased, as shown in Fig. S2a-b. Similar dynamics occur in the CP-SHN array, where the g factor and ORD values are enhanced (Fig. S2c-d) for any LP value with respect to the SHN case. Conversely, in the THN array, the dominant internal interactions among intertwined coaxial helices enable to boost the g factor, in a wider dichroic band, and the ORD value (Fig. S2e-f), due to the mutual internal couplings between excited surface plasmon modes of the individual intertwined helices. Moreover, the symmetric configuration (recovered rotational symmetry) allows to decrease the anisotropy contribution. Overall, it should be noted that all the figures of merit related to chiro-optical effects should be weighted over the transmission level, which is obviously reduced when closer and denser array arrangements are considered.

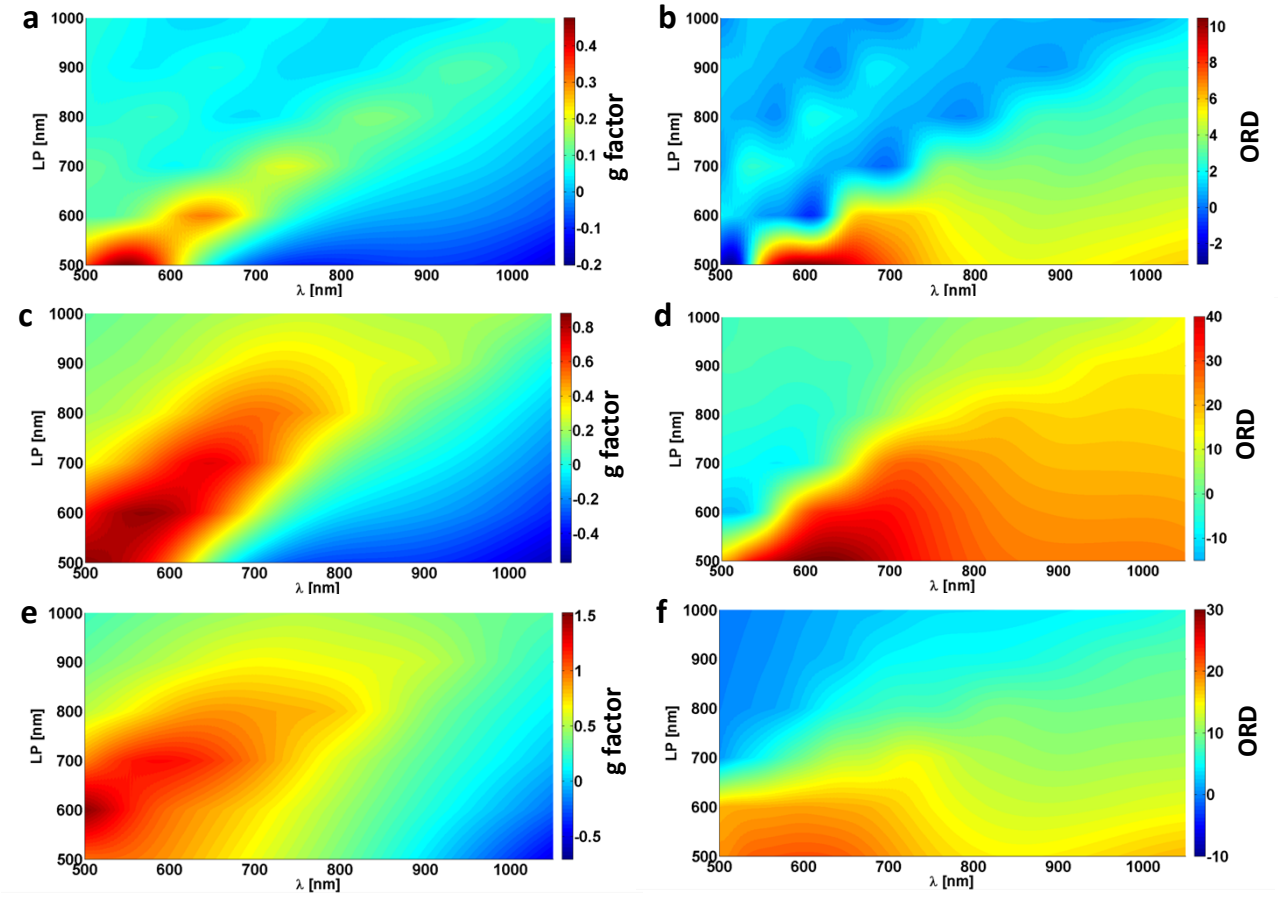

Fig.S2. FDTD simulations for SHN array of the g factor and ORD as a function of the wavelength (λ) and LP for SHN sample (a-b), CP-SHN sample (c-d) and THN sample (e-f), respectively.