Field-Mediated Chirality Transfer in Soft-Hard Matter Interfaces.

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Abstract
Matter-matter chirality transfer or imprinting is a process where chiral symmetry is induced in an achiral material through either chemical or physical interaction with a chiral system. Less common is the fact that through light-matter interaction chirality can be transferred to the electromagnetic field through absorption and re-emission of photons. The “chiralized” field exhibits different intensities for the two circularly polarized components. Such a field is capable of inducing chiral optical responses in achiral materials, e.g. Raman Optical Activity in Surface Enhanced Raman Response experiments.

In this contribution I will discuss the basic underlying physical mechanism in field-mediated chirality transfer, and how this novel effect can be used in spin-controlled chemical reactions and for the study of linear and non-linear responses in hybrid soft-hard interfaces.