Nonlinear Optical Properties of Chiral Polymers and Systems

André Persoons, *Department of Chemisty, University of Leuven, Belgium and Optical Sciences Center, University of Arizona, Tucson, AZ 85721 USA*. E-mail: andre.persoons@fys.kuleuven.ac.be

We present the nonlinear optical properties of different thin film films of chiral (conjugated) polymers. These systems exhibit large magnetic dipole nonlinearities, in some cases larger than the effects linked to electric dipole interactions. The nonlinear optical effects observed indicate the links between magnetic hypersusceptibilities and chirality. We also investigated supramolecular assemblies of helicenes where the nonlinear optical effects are exclusively described by electric dipole interactions. In the crystalline liquid state the chirality, as expressed by nonlinear CD effects, of these helicene assemblies could be switched by the application of an electric field.

Keywords: polymers, chirality, nonlinear optics