Highlights

New condensed matter theory has permitted the preparation of a variety of new nanostructured electro-optic materials lattices that permit significant improvement in material performance. In the following figure, we show the same chromophore in three different lattices (at the concentrations indicated) and demonstrate that significant improvements are achieved for dendritic structures. This is consistent with inhibition of intramolecular electrostatic interactions among high dipole moment chromophores.

Figure 1. The comparison of electro-optic activity achieved with different nanostructured architectures.

These materials have been used with nanostructured device architectures to achieve active wavelength division multiplexing.

Figure 2. Active WDM transmitter/receiver using organic EO microresonators.