Dynamic Helical Polymers: Sensors for the Valence of Metal Cations

Ricardo Riguera, Félix Freire, José Manuel Seco, Emilio Quiñoa
Centro Singular de Investigación en Química Biológica y Materiales Moleculares (CIQUS), Universidad de Santiago de Compostela, Santiago de Compostela, España.
e-mail: ricardo.riguera@usc.es

The design, synthesis and applications of helical polymers with a controlled helix sense has become a field of major interest in the last decade.[1,2] The possibility of controlling and switching the helicity of these polymers by an external stimulus (temperature, solvent, light...) [1] makes them good candidates for their use as chiral sensors, molecular devices, chiro-optical switches, memory elements for information storage, chiral catalyst and conductive materials.[1,2]

Our research group has recently demonstrated that it is possible to reverse the helix sense of a polyphenylacetylene bearing chiral pendants by adding metal salts. [3] Now we present a highly dynamic helical polymer with a novel chiral pendant[4] which presents an inactive CD spectrum. The selective interaction of the polymer with mono- and divalent metal cations induces a right or left handed helical sense of the polymer by a chiral amplification phenomenon.

References