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Bruce M Novak

The University of Texas, USA

The influence of chirality on polymers: From optical switches to vapor sensing

Chirality is deeply embedded in the intricate processes of nature. Less explored is the influence chirality has on the properties of synthetic materials. Asymmetry's impact is typically minor when dealing with random coil materials but becomes an overarching driver on the properties of polymers that adopt defined structures. Helical chains are the focus herein. Carbodiimides are a unique class of monomers that can be polymerized using transition metal catalysts to yield conformationally-stable helical polymers. By up fitting the metal centers with chiral ligands polycarbodiimides having a preferred screw-sense can be formed. These optically active polymers show highly unusual optical switching, self-assembly, surface, and bulk phase vapor sensing properties. The preparation and properties of chiral polycarbodiimides will be discussed.

Biography

Bruce M Novak has received his PhD in Chemistry from California Institute of Technology in 1989 and began his teaching career at UC, Berkeley. He later joined the University of Massachusetts before moving onto North Carolina State University where he served as the Head of the Chemistry Department. He currently serves as the Dean of the School of Natural Sciences and Mathematics at the University of Texas at Dallas and holds the Distinguished Chair in Natural Sciences and Mathematics.

bruce.novak@utdallas.edu

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