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Fumio Sanda

Kansai University, Japan

Precise synthesis of substituted polyacetylenes

Substituted polyacetylenes have received considerable attention, owing to their properties resulting from the π -conjugated backbone such as photoconductivity and electroluminescence. The introduction of functional groups at the side chains provides polyacetylenes with useful structural features including liquid crystallinity, molecular recognition, stimuli-responsiveness and gas permeability. Substituted polyacetylenes are synthesized by the polymerization of the corresponding acetylene monomers using transition-metal catalysts. Rh catalysts bearing a triphenylvinyl group polymerize substituted acetylene monomers in a living fashion to give polymers with controlled molecular weights, geometry and end structures. Pd catalysts bearing bulky phosphine ligands polymerize disubstituted acetylene monomers via the coordination-insertion mechanism. Substituted polyacetylenes bearing chiral substituents adopt helical conformations, whose predominant screw sense transforms between right and left-handed in $\text{CHCl}_3/\text{MeOH}$ with respect to the solvent composition. The polymers prefer conformations with large dipole moments in polar media, confirmed by the semi empirical molecular orbital calculations, COSMO method.

Biography

Fumio Sanda is a professor in Kansai University. His research studies includes Polymer Synthesis, Transition Metal Catalyzed Polymerization, Conjugated Polymers, Optically Active Polymers. He has received Nakamura award in the year 1997 and Award of Japan Thermosetting Plastics in 2014 and many more

sanda@kansai-u.ac.jp

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