

KALEIDOSCOPIIC VARIATION OF CRYSTAL
STRUCTURE / TOPOCHEMICAL BEHAVIORS
OF SOME DIOLEFIN COMPOUNDS

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Various types of topochemical [2+2] photocycloaddition behavior are discussed on the results of a series of alkyl pyridylethenyl cinnamate derivatives which have been carried out in my laboratory.

Based on the topochemical rule, the configuration of photoproducts, as well as photoreactivity, can be precisely predicted from the crystal structure of the starting olefin compounds with certain exceptions. On the other hand, it has been demonstrated that not only a slight change in the chemical structure of starting compound but, even for the same compound, a different crystallization procedure caused a drastic variation in the packing arrangement of the molecules, resulting in different topochemical photoreaction mode.

Highly stereoregular polymerization, "absolute" asymmetric synthesis and product control by employing co-crystallization of solvent molecules, were achieved through the crystal-lattice controlled process.