Palestine norbornadiene solar energy storage

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A series of substituted donor-acceptor norbornadienes with cyano acceptors and ethynyl-aryl donor units has been synthesized and evaluated in the context of molecular solar-thermal energy storage. A key step in the synthesis is a procedure for the formation of 2-cyano-3-chloronorbornadiene from readily available starting materials.

Molecular photoswitches of norbornadiene (NBD) derivatives have been effectively applied in molecular solar-thermal energy storage (MOST) by photoisomerization of NBD to a quadricyclane (QC) state. However, a challenge of the NBD-based MOST system is the lack of a reversible two-way photoswitching process, l

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Molecular solar thermal energy storage (MOST) systems can convert, store and release solar energy in chemical bonds, i.e., as chemical energy. In this work, phenyl- and naphthyl-linked bis- and tris-norbornadienes are presented as promising MOST systems with very high energy densities.

A general challenge is to combine efficient solar energy capture with high energy densities and energy storage time into a processable composite for device application. Here, norbornadiene (NBD)-quadricyclane (QC) molecular photoswitches are embedded into polymer matrices, with possible applications in energy storing coatings.

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So-called molecular solar thermal (MOST) systems[6] combine the light-harvesting process with storage of the gained energy in a single step. Upon irradiation, an energy-lean parent compound is converted into its energy-rich valence isomer. In the latter, the energy difference between the two photoisomers

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