

Remote stereocontrol by the sulfinyl group. Diels-Alder reaction of cyclopentadiene with substituted (S)-[2-(p-tolylsulfinyl)styrenes and (S)-[2-(p-tolylsulfinyl)phenyl] vinyl ketones

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The ability of a homochiral sulfinyl group at the dienophile to act as a remote stereocontrol inductor in the Diels-Alder reaction with cyclopentadiene has been evaluated. High pressure conditions were required for the reactions of (S)-2-(p-tolylsulfinyl)styrenes 3-5 (E-1,2-disubstituted double bond) and 6-8 (1,1-disubstituted double bond). A good facial selectivity and total endo selectivity were attained with 1,1-disubstituted dienophiles, though the 1,2-disubstituted ones afforded poorer results. In contrast, (S)-[2-(p-tolylsulfinyl)phenyl] vinyl ketones 9-11 reacted readily at low temperature (-40 °C) with complete endo selectivity and high facial selectivity in the presence of Yb(OTf)₃ as a chelating reagent of sulfinyl and carbonyl oxygen atoms. Concerning furan reactions, α -trifluoromethyl enone 14 afforded Diels-Alder adducts with high facial selectivity in the presence of the Lewis acid, but β -non-substituted enones 9 and 12 yielded products of furan conjugate addition to the