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SYNTHESIS AND PROPERTIES OF AN OPTICALLY ACTIVE SPIROSULFURANE

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The (+) and (-) enantiomers of spirosulfurane (1) were prepared from the optically active precursor sulfoxides (2) with acetyl chloride in the presence of triethylamine at -78° (enantiomeric purity >95%). The mixed anhydride (3) was isolated as a possible intermediate of acyloxysulfurane formation. The enantiomers of (1) proved to be surprisingly stable against heating and hydrolysis. The oxidation of (+)-or (-)-(1) with ozone or acetyl nitrate afforded optically inactive spirosulfurane oxide (4). Contrary to the behaviour of (1) and (2), the ¹H n.m.r. spectrum of (4) showed a sharp singlet resonance at δ 5.37 ppm for CH₂ protons at 25°. On lowering the temperature, this resonance undergoes changes characteristic of exchanging AB spin system (the coalescence occurred at -49°). The substantial decrease of the configurational stability of (4) with respect to that of (1) is readily understood in terms of assumptions of Nyholm-Gillespie theory. The mechanism for the formation of spirocyclic diaryl-diacyloxysulfuranes will also be discussed.

