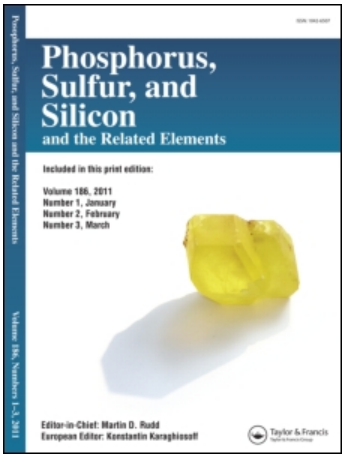

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Stereochemistry of the Reactions of Sulfur-Stabilized Carbanions on Cyclopropane and Cyclohexane Rings

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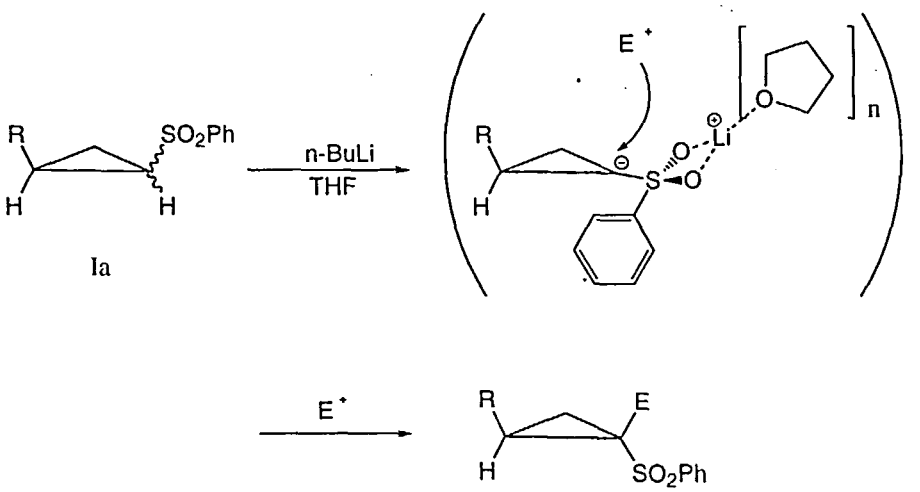
Stereochemistry in alkylations and H-D exchange of configurationally defined α-sulfonyl- and α-sulfinyl-carbanions generated from the compounds I-IV, are discussed.

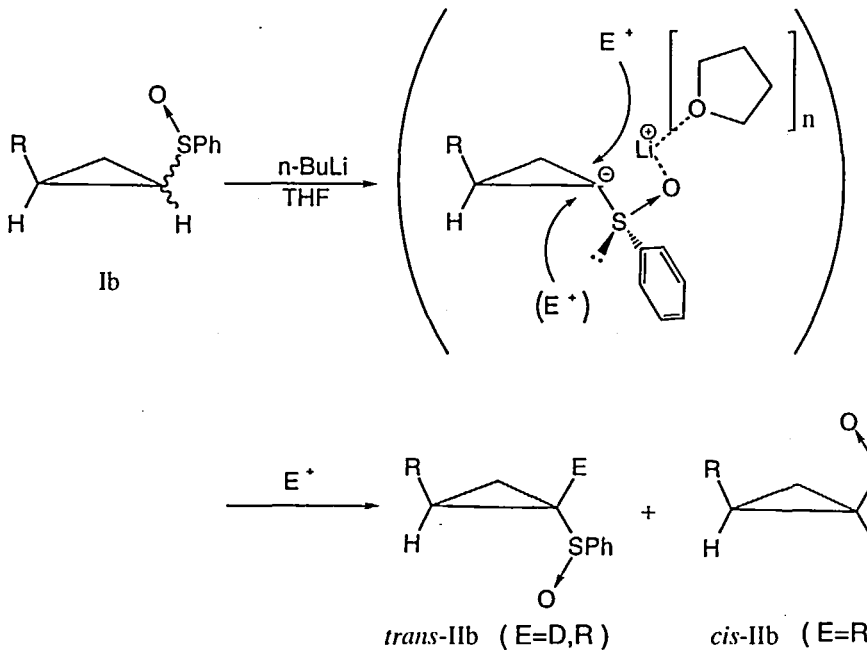
When carbanions generated from sulfones Ia were treated with electrophilic reagents, only *trans*-IIa were formed. In the reactions of these α-sulfonylcarbanions the steric effects must play an important role as shown below.



Ia

trans-IIa (E=D,R,COR)

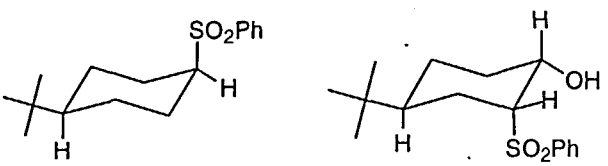
On the other hand, alkylation of sulfoxides Ib gave *cis*-IIb as well as *trans*-IIb. In α-sulfinylcarbanions the coordinating ability of a polar sulfinyl group to a Li^+ cation is operative, and haloalkanes may attack the carbanion from the both sides.



Ib

trans-IIb (E=D,R) *cis*-IIb (E=R)

On similar treatment of IIIa and IVa with n-BuLi equatorial cyclohexyllithium compounds were found to undergo the rapid isomerization to axial one because of the presence of a bulky sulfonyl group.



IIIa IVa

NMR observation of intermediary carbanions showed that two isomers were formed from IIIa or IVa, and their ratio was same to that of protonated products, but slightly different from alkylated ones. These findings mean that H^+-donating reagents approaches a Li^+ cation, but haloalkanes can attack a carbanion from the both sides.