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## Phosphorus, Sulfur, and Silicon and the Related Elements

Publication details, including instructions for authors and subscription information:

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### Sulfur as Supporting Element in Vinylcyclopropane Formation

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**To cite this Article** Schaumann, Ernst and Narjes, Frank(1993) 'Sulfur as Supporting Element in Vinylcyclopropane Formation', *Phosphorus, Sulfur, and Silicon and the Related Elements*, 74: 1, 395 — 396

**To link to this Article:** DOI: 10.1080/10426509308038132

**URL:** <http://dx.doi.org/10.1080/10426509308038132>

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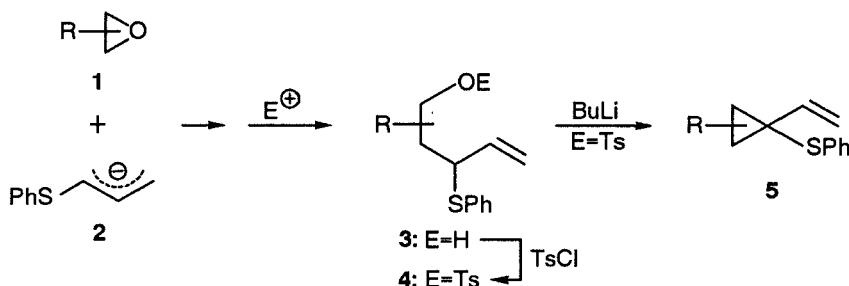
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## SULFUR AS SUPPORTING ELEMENT IN VINYLCYCLOPROPANE FORMATION

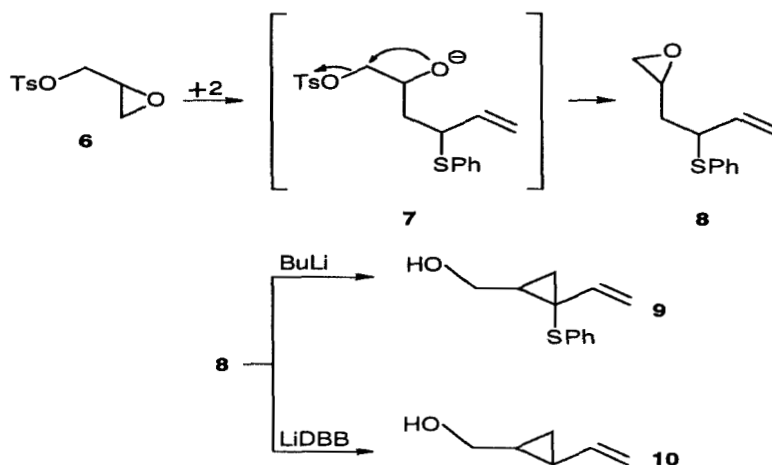
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**Abstract** Vinylcyclopropanes **5,9,10** are conveniently obtained by sulfur-mediated  $S_N1$  reactions.

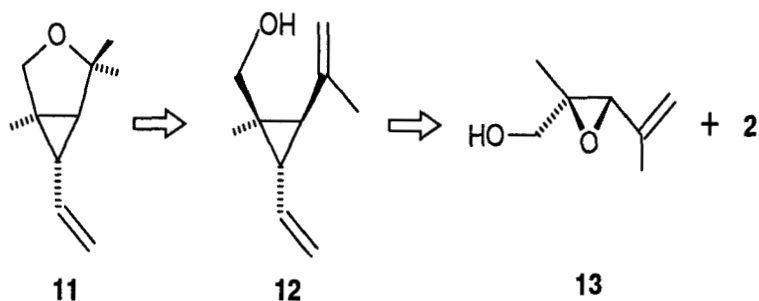
Bishomoallyl alcohols **3** are readily accessible from epoxides **1** and the sulfur-stabilized anion **2** of allyl phenyl sulfide. Tosylated derivatives **4** are available by tosylation of **3** or by quenching the reaction mixture from **1** and **2** with tosyl chloride. Now again the anion-stabilizing effect of sulfur can be used in a sequence of deprotonation/intramolecular nucleophilic attack giving vinylcyclopropanes **5**.<sup>1</sup>



Vinylcyclopropane formation is also possible by intramolecular ring-opening of epoxides. Here, oxiranes **6** with  $\alpha$ -tosyloxy-substituted side-chain are employed. Reaction with anion **2** regenerates an epoxide **8** via intermediate **7**. Subsequent ring-closure to vinylcyclopropanes **9,10** is then possible by sulfur-supported deprotonation or by reductive desulfurization employing the radical anion of di-tert.-butylbiphenyl (DBB).<sup>2</sup>



The methodology could be used in an asymmetric synthesis of the monoterpene ether artemeseol (**11**) from vinylcyclopropane **12** with oxirane **13** being the key intermediate. Also the responding nor-derivative can be obtained.<sup>3</sup>



### References

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