PHASE TRANSFER CATALYZED SYNTHESIS OF Z-2-BENZYLIDENE-4-PHENYL-1,3-DISELENOLE FROM METALLIC SELENIUM AND PHENYLACETYLENE

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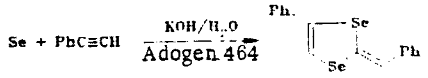
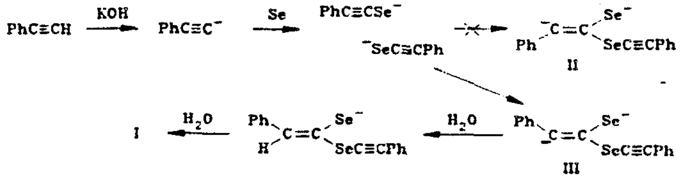
We have shown that reaction of a triphasic system of metallic selenium–aqueous–phenylacetylene at 80-120°C in the presence of a phase transfer catalyst leads to the formation of Z-2-benzylidene-4-phenyl-1,3-diselenole (I) in ~20% yield (based on the selenium taken).



I

In the absence of the phase transfer catalyst the diselenole was formed in only trace amounts.

The route proposed for formation of I includes generation of a phenylacetylene anion at the interface of two liquid phases, reaction of this anion with metallic, powdered selenium (which can be retained at the interphase boundary), and dimerization of the phenylethynselenoate anion involving two molecules of water.



The Z-configuration of I can be explained by the higher stability of carbanion III (compared with carbanion II) because of the repulsion effect of negative charges.

Spectral and other physico-chemical data for I agreed with the literature [1].

LITERATURE CITED

1. I. Lalezary, A. Shafiee, and M. Yalpani, J. Org. Chem., 38, 338 (1973).

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