FORMATION OF DIALLYL DISULFIDE FROM DIALLYL SULFIDE IN THE H_2S–DMSO SYSTEM

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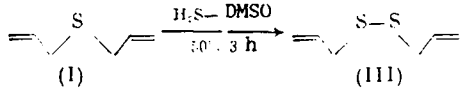
Diallyl sulfide (I) reacts with the H_2S DMSO LiOH system to form 3,7-dimethyl-1,2,5-trithiacycloheptane and 4-thia-1-heptene-6-thiol [1]. Di(propen-1-yl) sulfide (II) reacts with this system to give dipropyl polysulfides [2].

We have found that sulfide (I) reacts with the H_2S–DMSO system to give diallyl sulfide (III) in 76.3% yield. The conversion of sulfide (I) was 58.8%.



(I) (III)

Sulfide (II) does not undergo this reaction. The yield of disulfide (III) in the reaction of sulfide (I) with the S_8–DMSO system at 50°C over 3 h was 8.2% and the conversion of sulfide (I) was 16.3%.

A sample of 5.1 g sulfide (I) and 200 ml DMSO was heated at 50°C and hydrogen sulfide was introduced for 3 h. The mixture was cooled to room temperature, diluted with water, and extracted with ether. The ethereal extracts were washed with water and dried over $CaCl_2$. Ether was distilled off. The residue was fractionated in vacuum to give 2.9 g (76.3%) disulfide (III), 2.1 g (I), and ~1 g tarry residue.

PMR spectrum of disulfide (III) in $CDCl_3$ with HMDS as the internal standard (δ, ppm): 3.32 d (2H, CH_2), 5.07 m (2H, $=CH_2$), 5.83 m (1H, $=CH-$).

The physical constants of disulfide (III) were in accord with reported data [3]. The elemental analysis corresponded to the proposed formula. Mass spectrum: $M^{+\cdot}$ 146 m/z.

LITERATURE CITED

1. G. K. Musorin, S. V. Amosova, and G. A. Kalabin, Khim. Geterotsikl. Soedin., No. 4, 483 (1989).
2. G. K. Musorin and S. V. Amosova, Izv. Akad. Nauk SSSR, Ser. Khim., No. 6, 1439 (1987).
3. M. A. Kuznetsov, L. M. Kuznetsova, R. L. Plechko, et al., Properties of Organic Compounds [in Russian], Khimiya, Leningrad (1984), p. 202.

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