NEW METHOD FOR THE SYNTHESIS OF THIOPHENETHIOLS

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The existing methods for the synthesis of thiols of the thiophene series are based on the reaction of sulfur with 2-lithiothiophenes and subsequent decomposition of the resulting lithium salts of thiophene-2-thiols [1, 2].

We have developed a new method for the synthesis of thiophenothiols that is based on the reaction of chloro derivatives of thiophene and benzothiophene with hydrogen sulfide at 450-550°C. The chloro derivatives of thiophene (Ia-d) react with hydrogen sulfide to give the corresponding thiols in 20-40% yields via the scheme

$$2 R - C_1 + H_2 S - 2 R - S + 2 H C_1$$

$$1 a - d$$

$$11 A - d$$

Symmetrical sulfides of thiophene and benzothiophene are formed simultaneously with the thiols:

$$R - SH + R - S - CI - R - S - S - R + HCI$$
 (2)

Compounds IIa and IIIa (22 and 60% yields), IIb and IIIb (33 and 67%), IIc and IIIc (17 and 40%), IId and IIId (39 and 47% yields, based on the Ia-d consumed), respectively, were obtained by passing dry hydrogen sulfide at 9 liters/h and, simultaneously, vapors of chlorides Ia-d at 10 ml/h through a heated (to 450-550°C) empty quartz tube (655-mm long and 30 mm in diameter). The compounds obtained (I, II, and III) were separated by vacuum distillation with a fractionating column and identified from the literature physicochemical constants.

LITERATURE CITED

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