BENZO-1,3-DITELLUROLES

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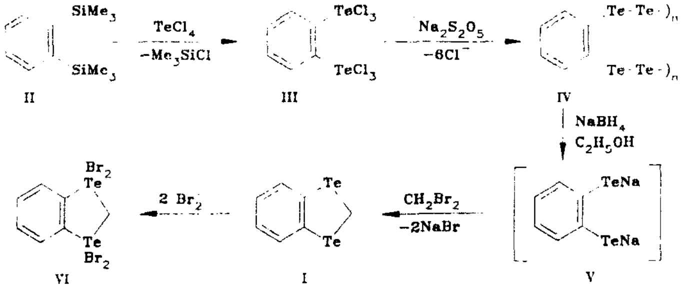
Up until now, only one compound that contains a benzoditellurole fragment — dibenzotetratellurafulvalene [1], which was obtained by the reaction of the dilithium derivative of 1,2-ditellurobenzene with tetrachloroethylene — has been described. We have synthesized benzo-1,3-ditellurole (I) starting from bis(o-trimethylsilyl)benzene (II). Reaction of the latter with tellurium tetrachloride (at a molar ratio of 1:2) in o-dichlorobenzene gave bis(o-trichlorotelluro)benzene (III) in 66% yield, the reduction of which with an aqueous solution of sodium metabisulfite led to ditelluride IV, which has a polymeric structure. Reduction of IV with sodium borohydride in ethanol and subsequent treatment of the intermediately formed 1,2-ditellurobenzene disodium derivative (V) with methylene bromide led to benzo-1,3-ditellurole in 16% yield. In addition to the 1,3-ditellurole, a polymer that is insoluble in ordinary solvents was formed as a result of intermolecular condensation; this polymer was the only product when methylene iodide was used.



The composition and structure of 1,3-ditellurole I were proved by the results of elementary analysis and the PMR spectrum, in which the signal of the methylene protons shows up in the form of a singlet at 4.53 ppm, as well as by conversion to 1,1,3,3-tetrabromobenzo-1,3-ditellurole (VI) by reaction with bromine and by the mass spectrum (M^+ 345).

Bis(o-trichlorotelluro)benzene (III). This compound was obtained in the form of pale-gray crystals with mp 320°C (from toluene).

Poly(ditelluride) IV. This product was obtained as a dark-red powder, with mp 165°C (dec.), in quantitative yield.

Benzo-1,3-ditellurole (I). This compound was obtained in the form of bright-yellow crystals with mp 96-98°C (from octane). PMR spectrum ($CDCl_3$): 4.53 (2H, s, CH_2), 6.80-7.30 ppm (4H, m, 4-, 5-, 6-, 7-H).

1,1,3,3-Tetrabromobenzo-1,3-ditellurole (VI). This compound was obtained in the form of bright-yellow crystals, with mp 268°C (from DMSO—$CHCl_3$), in quantitative yield.

LITERATURE CITED

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