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SYNTHESIS OF TELLURAXANTHENE

I. D. Sadekov, A. A. Ladatko, and V. I. Minkin

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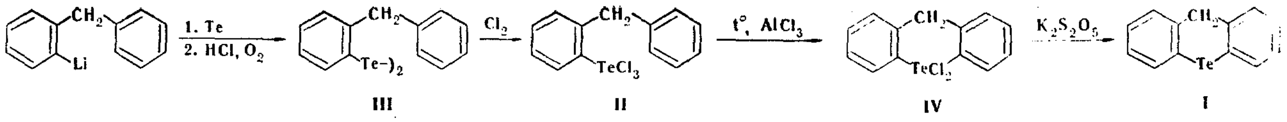
We have obtained the previously unknown telluraxanthene (I) by intramolecular electrophilic cyclization of 2-trichlorotelluriodiphenylmethane (II) in the presence of aluminum chloride and subsequent reduction.



Ditelluride III was obtained in 78% yield by reaction of 2-lithiodiphenylmethane (from 2-bromodiphenylmethane and lithium) in ether with powdered tellurium and subsequent treatment of the resulting lithium tellurophenoxide with hydrochloric acid in air; the product was obtained as large red crystals with mp 101°C (from petroleum ether). PMR spectrum in deuteroacetone: 4.17 (s, 2H, CH_2) and 6.95-8.07 ppm (m, 9H, aromatic protons). Compound II was obtained in almost quantitative yield when chlorine was passed with cooling into a solution of III in methylene chloride; the product was obtained as slightly yellowish crystals with mp 199-200°C (from glacial acetic acid). Large colorless plates of 10,10-dichlorotelluraxanthene (IV), with mp 250-270°C (dec., from chlorobenzene), were obtained in 80% yield when equimolar amounts of II and aluminum chloride were heated in o-dichlorobenzene at 50-70°C for 3-4 h. Treatment of a suspension of IV in water with potassium metabisulfite gave colorless needles of telluraxanthene, with mp 151°C (from petroleum ether), in almost quantitative yield. PMR spectrum in deuteroacetone: 3.93 (s, 2H, CH_2) and 6.90-7.93 ppm (m, 8H, aromatic protons).

The results of elementary analysis of I-IV were in agreement with the calculated values.

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