

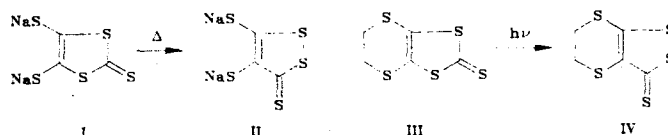
PHOTOCHEMICAL REARRANGEMENT OF 4,5-ETHYLENEDITHIO-1,3-DITHIOL-2-THIONE TO 4,5-ETHYLENEDITHIO-1,2-DITHIOL-3-THIONE

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We have previously reported the thermal rearrangement of disodium 1,3-dithiol-2-thione-4,5-dithiolate (I) to the 1,2-isomer, viz., disodium 1,2-dithiol-3-thione-4,5-dithiolate (II). Complex salts of compound I (e.g., the tetraethylammonium zincate) and 4,5-dialkylthio-1,3-dithiol-2-thione are thermally stable.

We have established that 4,5-dialkylthio-1,3-dithiol-2-thiones tend to undergo photochemical rearrangement; e.g., 4,5-ethylenedithio-1,3-dithiol-2-thione (III) upon irradiation is quantitatively converted to 4,5-ethylenedithio-1,2-dithiol-3-thione (IV).



Irradiation of a solution of thione III in ethanol ($5 \cdot 10^{-5}$ mole/liter) in a quartz cuvette ($l = 1$ cm) by a halogen lamp (50 W) causes formation of compound IV in 3 h. With irradiation by a high pressure mercury lamp (DRT-125-1) the reaction is complete in 1 h. The course of the reaction can be followed by spectrophotometry and by TLC (for III, R_f 0.5; for IV, R_f 0.25 (2:3 benzene-hexane)). When the reaction was carried out on a preparative scale in benzene, thione IV was separated in 93% yield; it did not depress the melting point of an authentic sample prepared according to [1]. Other 4,5-dialkylthio-1,3-dithiol-2-thiones behave similarly.

LITERATURE CITED

1. G. Steimecke, H. Sieler, R. Kirmse, W. Dietzsch, and E. Hoyer, *Phosphorus Sulfur*, **12**, 237 (1982).

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