Chemistry of Heterocyclic Compounds, Vol. 32, No. 8, 1996

LETTERS TO THE EDITOR

DIRECT METHOD FOR THE SYNTHESIS OF POLYCHLORINATED DIBENZOTHIOPHENES

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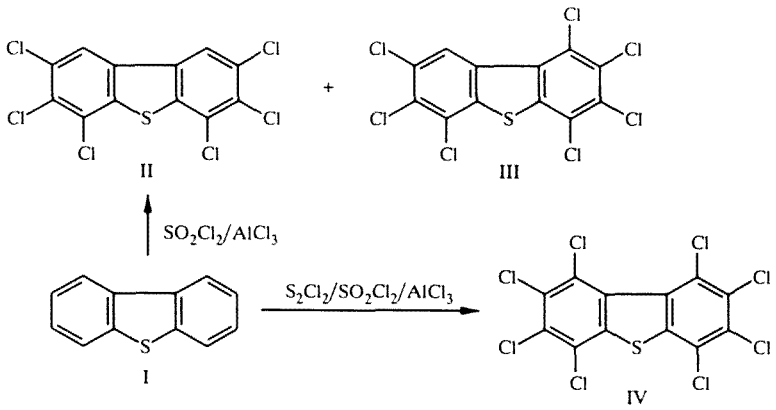
Direct chlorination of dibenzothiophene (I) with molecular chlorine leads to adducts at the sulfur atom which readily decompose to the sulfoxide [1] and all known chloro derivatives of I have been made by indirect routes.

We have found that reaction of I with sulfuryl chloride and aluminum chloride in the absence of solvent gave a mixture of 2,3,4,6,7,8-hexachloro- (II) and 1,2,3,4,6,7,8-heptachlorodibenzothiophene (III).

Use of a mixture of sulfur monochloride, sulfuryl chloride and aluminum chloride under the same conditions gave perchlorodibenzothiophene (IV) in quantitative yield.



It is probable that in both cases compound I forms a complex with aluminum chloride at the sulfur atom [2] and this directs electrophilic attack to the carbon atoms.

Compound II. Yield 52%. mp 198-200°C. Found, %: C 36.69, H 0.48, Cl 54.60, S 8.25. Calculated for $C_{12}H_2Cl_6S$, %: C 36.83, H 0.51, Cl 54.48, S 8.18. Mass spectrum, *m/z* (I_{rel}, %): 390 (M^+, 100).

Compound III. Yield 34%. mp 240-242°C. Found, %: C 34.01, H 0.27, Cl 58.55, S 7.71. Calculated for $C_{12}HCl_7S$, %: C 33.84, H 0.24, Cl 58.40, S 7.52. Mass spectrum, *m/z* (I_{rel}, %): 422 (M^+, 100).

Compound IV. Yield 98%. mp 326-328°C. Found, %: C 31.52, Cl 61.87, S 7.02. Calculated for $C_{12}Cl_8S$, %: C 31.30, Cl 61.74, S 6.96. Mass spectrum, *m/z* (I_{rel}, %): 456 (M^+, 100).

REFERENCES

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0009-3122/96/3208-0979$15.00