SYNTHESIS OF FLUORANTHENOIMIDAZOLE COMPOUNDS

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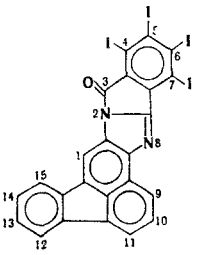
2-Nitro-3-aminofluorenthene (I) forms fluoranthenoimidazole compounds (III) on refluxing in acetic acid in the presence of iron powder with aromatic dicarboxylic acid anhydrides (II) [1].

We have found that the reaction of the isomeric 2-amino-3-nitro-fluoranthene (IV) [2] with anhydrides II gives the same compounds (III) rather than compounds with isomeric structures, which are excluded because of the steric interaction of the oxygen atom of the carbonyl group with the peri hydrogen atom of the naphthalene portion of the molecule.



III a

The IR spectra of IIIa, b at 1750 and 1708 cm^{-1}, respectively, contain the intense absorption bands of a carbonyl group and a strong absorption band at 922-925 cm^{-1}, which can be ascribed to vibrations of the C=N group. Thus 1.62 g (77%) of bright-red fine needles of 1,2,3,4-tetraiodo-15-oxofluorentheno[4',5' : 4,5]imidazo[2,1-b]isoindole (IIIa), with mp 421-423° (from dimethyl sulfoxide), was obtained from 0.65 g (2.5 mmole) of amine IV and 1.62 g (2.5 mmole) of tetraiodophthalic anhydride. The same substance (IIIa) was obtained from amine I in 66% yield [1]. UV spectrum: λ_{max} 505 nm (in chlorobenzene). Bright-red needles of 7-oxobenzo[d,e]fluorantheno[8',9' : 5,4]imidazo[1,2-b]isoquinoline (IIIb), with mp 345-346° (from pyridine), were similarly obtained in 84% yield from amine IV and naphthalic anhydride. UV spectrum: λ_{max} 455 nm (in chlorobenzene). The results of analysis for C, H, and N were in agreement with the calculated values. The substances obtained by the different methods had identical UV and IR spectra.

Isomers were not detected by chromatography in a thin layer of Al_2O_3 or SiO_2 with $CHCl_3$, CH_2Cl_2, and MeOH–$CHCl_3$ solvent systems.

LITERATURE CITED

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2. M. I. Shenbor and V. I. Tikhonov, USSR Author's Certificate No. 416,347 (1972); Byul. Izobr., No. 7 (1974).

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