ASSIGNMENT OF THE $\nu_{C=O}$ BAND AND AMIDE ABSORPTION OF 9-ACRIDONE AND ITS DERIVATIVES

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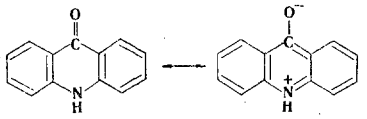
Up to now, the assignment of the band at about 1640 cm^{-1} in the IR spectrum of 9-acridone (I) to the C=O stretching vibrations and of the band at 1600 cm^{-1} to the ring vibrations [1] has been widely accepted. Our comparison of the spectra of I and 9-thioacridine contradicts this, since the band at 1640 cm^{-1} is retained in the spectrum of the latter, while the band at 1600 cm^{-1} is absent [2]. The band at 1600 cm^{-1} apparently corresponds to the C=O vibrations; this conclusion is in agreement with the data in [3] for 4-pyridone ($\nu_{C=O}$ 1580 cm^{-1}). In analogy with [3], such a significant shift in $\nu_{C=O}$ should be explained by the large contribution of resonance structure II.



I II

Compound I is a vinylog of secondary amides of acids; this is confirmed not only by the C=O absorption band (amide I band) but also by the other amide absorption bands [4] that we observed (Table 1).

The spectra of KBr pellets were recorded with a UR-10 spectrometer.

LITERATURE CITED

1. R. N. Nurmukhametov, Absorption and Luminescence of Aromatic Compounds [in Russian], Moscow (1971), p. 174.
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3. A. R. Katritzky (editor), Physical Methods in Heterocyclic Chemistry, Academic Press (1963).
4. L. Bellamy, Infra-Red Spectra of Complex Molecules, Methuen (1958).

TABLE 1. Amide Absorption Bands in the IR Spectra of I and Its Derivatives (cm^{-1})*

Substituents in I	Amide III band	Amide II band	Amide I band
—	1265 m	1559 s	1600 s
6-NO_2	1268 m	1575 s	1592 s
2-OCH_3-6-NO_2	1264 m	1560 s	1603 s
7-NO_2	1260 m	1582 s	1610 s
2-Cl-7-NO_2	1272 m	1580 s	1610 s

*Abbreviations: m is medium and s is strong.

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