



Terenin Memorial Symposium

**5th International Symposium on Molecular Photonics
dedicated to the memory of Academician A.N. Terenin (1896–1967)
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BOOK OF ABSTRACTS

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Oral lectures

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Memorial section

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Optical spectra and the nature of electronic excited states of sulgin

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Sulfanilamide preparations are a group of chemically synthesized compounds used for the treatment of infectious diseases, mainly of bacterial origin [1]. One of the brightest representatives of sulfanilamide drugs is sulgin (Fig. 1). Sulgin is used in veterinary medicine for the treatment of gastrointestinal dyspepsia of young animals of all types of birds for 5–7 days, as well as for the treatment of cattle, horses, pigs, sheep, dairy calves, suckling pigs, chickens – 2 times a day 4÷6 days in a row. In order to then use in food products obtained from animals that have been treated with this drug, it is necessary to withstand a period after which it is completely removed from the animal's body. However, not all manufacturers follow this procedure, which is why sulgin can enter the human body through food [2, 3].

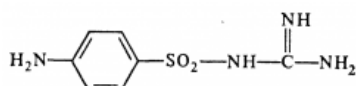


Figure 1: Sulgin

To control sulgin in livestock products, it is necessary to develop an express method, it was decided to choose a spectral method using a fluorescent probe. The purpose of this work is to study the spectral characteristics of sulgin in water. Up to a concentration of 0.1 mM, a strictly linear dependence of the absorption intensity of sulgin remains, and all the laws of light absorption are observed.

We can confidently conclude that sulgin is in monomeric form in water. We used this dependence as a calibration curve for further studies of the determination of sulgin residues in milk serum.

The second derivative method was used to accurately establish the electronic transitions of sulgin in water: 197, 208, and 259 nm (Fig. 2). The sulgin Stokes shift is 9710 cm^{-1} . This is of great importance for an organic molecule, which indicates that the sulgin molecule is rather involved in intermolecular interactions with the environment. Since the values of the molar extinction coefficient ϵ indicate that the electronic transitions are transitions of the $\pi \rightarrow \pi^*$ type.

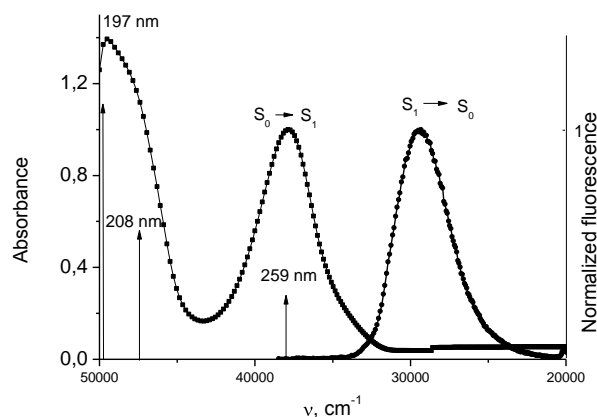


Figure 2: Absorbance and fluorescence spectra of sulgin in water

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References

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