

## LITERATURE CITED

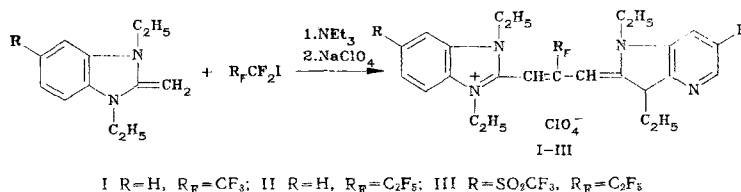
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 $\beta$ -PERFLUOROALKYLIMIDOCARBOCYANINES

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We have found that, in contrast to other nitrogen heterocycles [1], the methylene bases obtained from quaternary salts of benzimidazole [2] react with perfluoroalkyl iodides without irradiation. This forms  $\beta$ -perfluoroalkylimidocarbocyanines containing one  $\text{CF}_2$  group less than in the initial perfluoroalkyl iodides. A solution of 10 mmole of the appropriate methylene base, 7 mmole of perfluoroalkyl iodide, and 5 mmole of anhydrous triethylamine in 10 ml of anhydrous acetonitrile was stirred at 20°C for 4 h. Then 20 mmole of  $\text{NaClO}_4$  in 2 ml of water was added to the mixture. The dye was extracted with dichloroethane, and the extract was washed with 200 ml of water and dried with  $\text{MgSO}_4$ . The solvent was evaporated off in vacuum and the dye was crystallized from ethanol. Imidocarbocyanines substitute in the  $\beta$  position have scarcely been studied.



It is interesting that, in contrast to the thia-, quino-2-, and indocarbocyanines, the introduction of perfluoroalkyl groups into the  $\beta$  position of an imidocarbocyanine scarcely affects the absorption maximum (shifts of 1-3 nm). The extinctions in the spectra of the dyes (I-III) had lower values, which shows the existence of pronounced steric hindrance.

The following details are given for the dyes synthesized: compound, mp, °C,  $\lambda_{\text{max}}$ ,  $\epsilon \cdot 10^{-4}$  (ethanol), yield, %: 2-[3-(1,3-diethylbenzimidazolin-2-ylidene)-2-trifluoromethylprop-1-enyl]-1,3-diethylbenzimidazolium perchlorate (I), 167-168 (decomp.), 498, 2.69, 40; 2-[3-(1,3-diethylbenzimidazolin-2-ylidene)-2-perfluoroethylprop-1-enyl]-1,3-diethylbenzimidazolium perchlorate (II), 169-170 (decomp.), 500, 2.33, 33; and 2-[3-(1,3-diethyl-6-trifluoromethylsulfonylbenzimidazolin-2-ylidene)-2-perfluoroethylprop-1-enyl]-1,3-diethyl-6-trifluoromethylsulfonylbenzimidazolium perchlorate (III), 227-228 (decomp.), 526, 4.51, 68. The results of elementary analysis for C, H, and F corresponded to the calculated figures.

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