

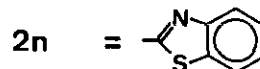
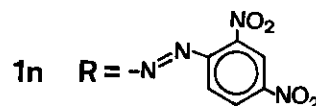
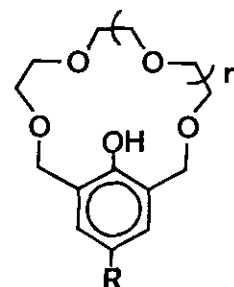
SYNTHESIS AND PROPERTY OF FLUORESCENT CYCLIC POLYETHER DYE
CONTAINING A BENZOTHAZOLE UNIT

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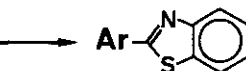
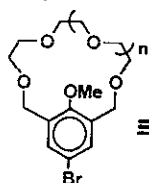
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In connection with the study on ion-selective coloration of "crowned" dinitrophenylazophenol dye $1n$ ($n=1,2$)¹⁾, cyclic polyether phenol $2n$ ($n=1,2$) containing a benzothiazole unit was designed as a fluorescence reagent and synthesized as follows.

In polar solvent, 2_1 , λ_{\max} 318 nm in EtOH, partially dissociates to form phenolate ion 3_1 with λ_{\max} at ca. 360 nm. The dissociation equilibrium of 2_1 is also reflected to two excitation maxima, the difference of which is large enough to realize an exclusive excitation. Namely, 2_1



$n = 1, 2$

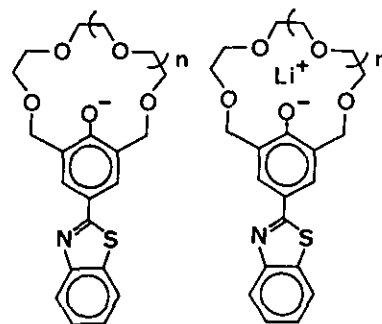


and 3_1 by the excitation at 325 and 373 nm fluoresce selectively at 376 and 426 nm, respectively.

In nonpolar solvent such as $CHCl_3$, no ionic species 3_1 is detectable even in the presence of triethylamine. An intense visible fluorescence caused from 4_1 is observed on excitation after the addition of crystalline LiBr. The other alkali metal bromides are quite inactive for the emission.

This lithium salt selective emission is understood

by base-assisted exchange of phenolic proton with fitting-sized lithium ion.



$3n$

$4n$

REFERENCES

1. a) T. Kaneda, K. Sugihara, H. Kamiya, and S. Misumi, *Tetrahedron Lett.*, **22**, 4407 (1981), b) K. Sugihara, T. Kaneda, and S. Misumi, *Heterocycles*, **18**, 57 (1982), c) K. Nakashima, S. Nakatsuji, S. Akiyama, T. Kaneda, and S. Misumi, *Chemistry Lett.*, **1982**, 1781.