

COMMENTS

BULLETIN OF THE CHEMICAL SOCIETY OF JAPAN, VOL. 50 (11), 3077 (1977)

On the Conductometric Determination of the Formation Constants of the Alkali Metal Complexes of "Crown" Polyethers

Joseph JAGUR-GRODZINSKI*

Weizman Institute of Science, Rehovot, Israel

(Received March 3, 1977)

Matsuura *et al.*¹⁾ recently published data on the formation constants of the alkali metal complexes of dibenzo-18-crown-6 (DBC). Their results are, however, at variance with the values of the formation constants in DMF of the sodium and lithium thiocyanate complexes of DBC previously reported by Shchori *et al.*²⁾ Both investigations were based on conductometric measurements. The discrepancy certainly calls for comment. The experimental set-ups applied in the two investigations differ. Accordingly, a different mathematical treatment should be adopted to calculate the formation constants from the experimentally determined conductances.

Shchori *et al.* performed experiments at a constant concentration of a salt, while changing the concentrations of DBC. The opposite has been done by Matsuura *et al.* In the latter case, the calculation of formation constants was based on small differences in the values

of equivalent conductances due to their concentration dependence and to the differences in the degree of complexation¹⁾.

This makes the method extremely sensitive to minor experimental errors. Moreover, the concentration dependence of the equivalent conductance of the complex differs from that of the uncomplexed salt, since the respective Λ_0 values differ.³⁾ An appropriate mathematical treatment should be applied taking this fact into account. Unfortunately, it has been neglected by Matsuura *et al.*

References

- 1) N. Matsuura, K. Umemoto, Y. Takeda and A. Sasaki, *Bull. Chem. Soc. Jpn.*, **49**, 1246 (1976).
- 2) a) E. Shchori, J. Jagur-Grodzinski, Z. Luz, and M. Shporer, *J. Am. Chem. Soc.*, **93**, 7133 (1971); b) E. Shchori, J. Jagur-Grodzinski and M. Shporer, *ibid.*, **95**, 3842 (1973).
- 3) E. Shchori and J. Jagur-Grodzinski, *Israel J. Chem.*, **11**, 243 (1973).

* Temporarily with Ciba-Geigy Ltd., CH-4002 Basel, Switzerland (On Sabbatical leave)