

## Discussion

# Isotachophoresis of polyols in borate buffer solutions

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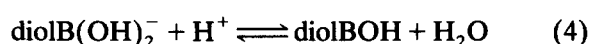
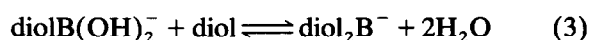
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In a recent Short Communication in this journal [1], Atamas and Troitsky reported on the electrophoresis of polyols in boric acid solutions. In Fig. 1, experimental data of isotachophoretic mobility vs. pH are fitted to a model equation. The major systematic difference between the model and experiment in all four examples indicates that the model presented requires adjustment, especially in view of the following three considerations.

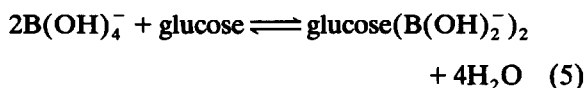
(1) In isotachophoresis it is not uncommon for the pH of the isotachophoretic zones to differ substantially from the pH of the leading electrolyte buffer [2].

(2) The existence of the following equilibria regarding the interaction between diols and boric acid was published many years ago [3,4]:



(3) In addition, mobility differences between, e.g., glucose and rhamnose, also determined by Frahn *et al.* [5] and Consden *et al.* [6], are readily

explained by the following additional equilibrium:



as glucose has two pairs of adjacent hydroxyl groups, both orientated in the same direction, whereas rhamnose has only one.

The first can contribute considerably but it remains to be seen which of these aspects will predominate.

## REFERENCES

- 1 S.P. Atamas and G.V. Troitsky, *J. Chromatogr.*, 644 (1993) 407.
- 2 F.M. Everaerts, Th.P.E.M. Verheggen and J.L. Beckers, *Isotachophoresis, Theory, Instrumentation and Application (Journal of Chromatography Library, Vol. 6)*, Elsevier, Amsterdam, 1976.
- 3 H.S. Isbell, J.F. Brewster, N.B. Holt and H.L. Frush, *J. Res. Natl. Bur. Stand.*, 40 (1948) 129.
- 4 J. Boësen, *Adv. Carbohydr. Chem.*, 4 (1949) 189.
- 5 J.L. Frahn and J.A. Mills, *Chem. Ind. (London)*, (1956) 578.
- 6 R. Consden and W.M. Stainer, *Nature*, 169 (1952) 783.