

# Internal Mobilities in the Molten Ternary System (Li,K,Cs)NO<sub>3</sub> of the Eutectic Composition

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Z. Naturforsch. **54a**, 329–334 (1999); received June 12, 1998

The  $\varepsilon$  values in the internal cation mobilities of (Li,K,Cs)NO<sub>3</sub> of the eutectic composition (35.2–39.8–25.0 mol%) in the temperature range from 453 to 673 K were measured by Klemm's countercurrent electromigration method, where  $\varepsilon$  is defined as  $(b_i - b_j)/b_a$ ;  $b_a$  is the average internal cation mobility and the subscripts i and j refer to any two out of these three cations. The conductivity was measured by a direct current method. From these data and the molar volume calculated from those of the pure salts on the assumption of additivity, the internal cation mobilities,  $b_{\text{Li}}$ ,  $b_{\text{K}}$  and  $b_{\text{Cs}}$ , have been calculated. The  $b_{\text{Li}}$  is well expressed by the empirical equation presented for binary alkali nitrates; the negative deviation for  $b_{\text{K}}$  and  $b_{\text{Cs}}$  may be accounted for on the assumption of the tranquilization effect of Li<sup>+</sup>. The orders of those internal cation mobilities are  $b_{\text{Cs}} < b_{\text{K}} < b_{\text{Li}}$  at 453–473 K,  $b_{\text{Cs}} < b_{\text{Li}} < b_{\text{K}}$  at 473–583 K, and  $b_{\text{Li}} < b_{\text{Cs}} < b_{\text{K}}$  at 583–673 K. These orders can be interpreted in terms of the dynamic dissociation model previously presented.

*Key words:* Internal Mobility; Molten (Li,K,Cs)NO<sub>3</sub>; Dynamic Dissociation Model.