

Selective Permeability of Alkali Metal Ions  
through charged Phosphorated Cellulosic Membranes

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The permeability of charged cellulosic membrane in alkaline metal salts solution was determined at  $25 \pm 0.001^\circ\text{C}$ . The Phosphorylated Cellulose was prepared from powdered pulp(80~150 mesh) with a complex solution including urea, phosphoric acid and water. The permselectivity of LiCl, NaCl, KCl and CsCl through the Phosphorated Cellulosic Membrane(P.C.M) was studied. The permeability coefficients were found in general in the sequence of  $\text{LiCl} < \text{NaCl} < \text{CsCl} < \text{KCl}$  and small due to Donnan exclusion in the region of low external salt concentration.

The dependence of the permeability on the salts concentration was interpreted by means of Teorell-Meyer-Sievers theory based on the Nerst-Plank flux equation. In series of alkaline metal chlorides the ionic mobility ratio of cations in the membrane decrease with increasing Stokes radius of the cations as that in bulk aqueous solution. The effectiveness of the fixed charge density was found on the ionic species and was explained by considering the counterion binding by the negatively charged group in the membrane.

#### References

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