Research on the transfer rate of H⁺ and chemical batteries





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Content

- Experiment 1
- The measurement of transfer rate of H⁺

- Experiment 2
- Application to chemical batteries

Experiment 1

ionization $HCI \rightarrow H^+ + CI^-$



agar

Experiment 1 Research Method





1. Put HCl on the agar

2. Apply voltage and Record with PC

Experiment 1 Research Method

Before







Calculate the transfer rate visually

Experiment 1 Focus on the difference in viscosity of the agar viscosity acrylic stee



Hypothesis 1 $v_i =$

v_i(m/s):moving speed of charged particles Q(C):electric charge E(N/C):electric field f(N•s/m):drag coefficient



Hypothesis 1

$f = k\eta$

k(m):coefficient defined by shape and size of particles η(Pa • s):coefficient of viscosity of medium



Experiment 2 Try to apply the result to a chemical battery



Voltaic battery

Refrigerate and measure the voltage



Result 1



Result 1



Easy to deteriorate



Easy to deteriorate







Conclusion

Experiment 1

The smaller the viscosity is, the larger v_i becomes.

Experiment 2

The voltage of the chemical battery doesn't depend on its viscosity.

Future prospect

Measure v_i and viscosity more accurately





sourcehttps://www.sagaitc.jp/_1018/_1008/_1002.html

Thank you for listening!

