

**Determination of Transport Properties of LiPF<sub>6</sub> in Ethylene Carbonate –Ethyl Methyl Carbonate**

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The performance of an electrolyte is dependent on ionic transference number, conductivity and diffusion coefficient. The electrolyte system LiPF<sub>6</sub> in ethylene carbonate –ethyl methyl carbonate (EC-EMC) has been proven to have high conductivity and relatively broad liquid range [1,2] which make it widely adopted in lithium battery research. Although the conductivity of this electrolyte system has been well studied [1], there has been a lack of study on the transference number, diffusion coefficient and thermodynamic factor. This work fills in this lack of transport data, and presents a complete set of transport parameters of this electrolyte system at various salt concentrations. The salt diffusion coefficient measurements were performed according to the restricted diffusion method [3]. The cationic transference number was determined by using the Hittorf method [4,5], and the thermodynamic factor was obtained by concentration cell measurements. The experimental results can be used to identify the optimum salt concentration of the electrolyte system. The results were also used as input parameters for an electrochemical ac impedance model which was discussed elsewhere [6].

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**References**

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