

**Gel-type, poly(ethylene oxide)-based electrolytes for lithium batteries.**

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Novel types of lithium conducting polymer electrolytes have been obtained by swelling poly(ethylene oxide), PEO membranes with organic solutions. By properly selecting the PEO configuration and the type and concentration of the solutions, large swelling ratio may be reached without compromising the mechanical properties of the membrane<sup>1</sup>.

Figure 1 reports the conductivity of the membrane with that of the swelling solution. A comparable behavior both in terms of conductivity and of activation energy, is clearly shown.

It is expected that these PEO-based membranes may be profitably used for the development of polymer lithium ion batteries. Preliminary results obtained in our laboratory confirm this prevision, as supported by Figure 2 that illustrates the initial cycling behavior of a C / PEO-membrane /LiCoO<sub>2</sub> prototype cell.

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**Reference.**

1) G.B.Appetecchi, Y.Ahiara, B.Scrosati, submitted

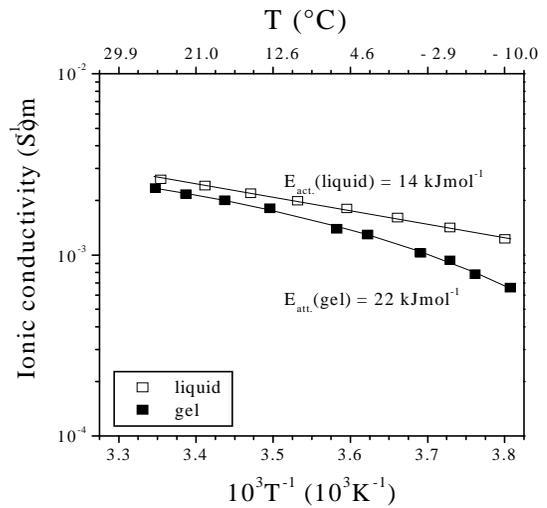


Figure 1. Conductivity Arrhenius plot of a PEO-based swelled membrane and of the related swelling solution.

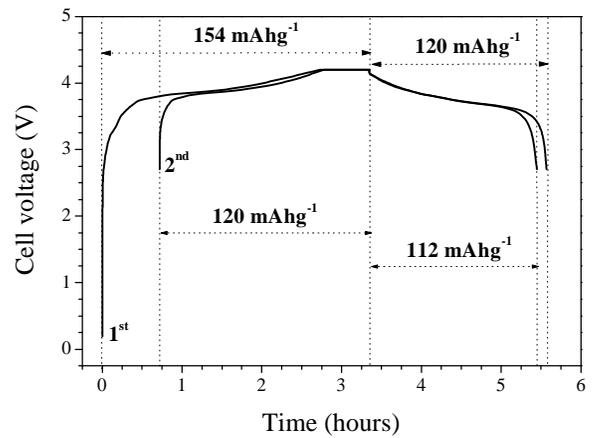


Figure 2. First and second charge-discharge cycles at 25 °C and at C/2.5 of a C /PEO-Membrane /LiCoO<sub>2</sub> prototype cell