

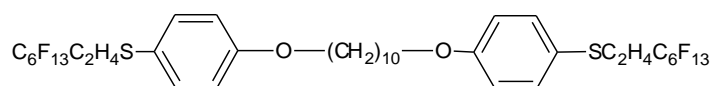
Electrochemical Properties of Gel Electrolyte for Li-ion Battery Formed by Fluorine-Containing Gemini-Type Low Molecular Gelators

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In our previous research, it was found that low molecular compounds with perfluoroalkyl group could gelate several organic solvents.

In this study, gemini-type low molecular gelators having perfluoroalkyl group at both terminal positions were synthesized and evaluated the gelation properties.



Compound 1

Fig. 1. Chemical structure for compound 1.

The critical gel concentration and sol-gel transition temperature were measured in electrolyte solutions **II** (1M LiFSA / EC:PC:DEC (2:1:7)) and **III** (3M LiFSA / EC:PC:DEC (2:1:7)). The sol-gel transition temperatures for the gel **I** 2wt% and gel **II** (2wt%) were 45°C and 52°C, respectively.

Furthermore, the ionic conductivities of the gel electrolytes which added compound 1 an amount of 2wt% in the electrolyte solutions were measured by AC impedance measurement (Fig. 2.). In this presentation, comparison of the potential windows between neat electrolyte solutions and gel electrolytes will be reported.

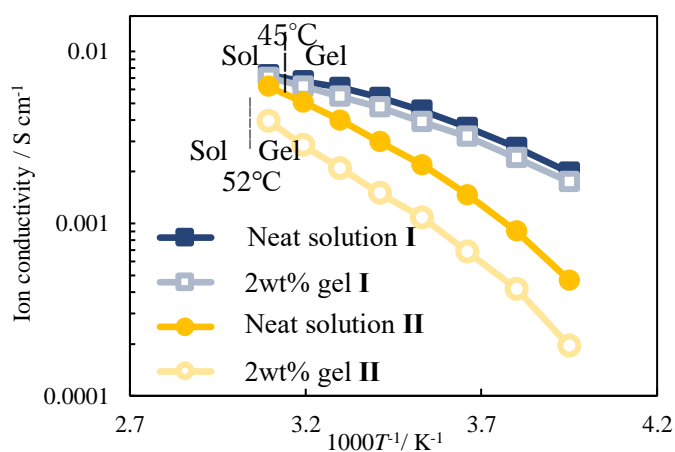


Fig.2. Temperature dependence of ionic conductivity

Ref: Tomohiro Yoshida *et. al.*, *Bull. Chem. Soc. Jpn.* **88**, 1447 (2015).