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Corresponding Author: kamisah_mohd.mahbor@sirim.my
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IMPEDANCE SPECTROSCOPY STUDY ON THE REACTIVITY OF PVDF/HFP-BASED GEL POLYMER ELECTROLYTES TOWARDS A LITHIUM ELECTRODE

Kamisah Mohamad Mahbor[a] and Ibrahim Abu Talib[b]
[a]*AMREC, SIRIM Berhad, Lot 34, Jln Hi-Tech 2/3, Kulim Hi-Tech Park, 09000 Kulim, Kedah*
[b]*School of Applied Physics, Faculty of Science & Technology Universiti Kebangsaan Malaysia, 43600 Bangi, Malaysia*

ABSTRACT

The reactivity of poly(vinylidene-co-hexafluoropropylene) (PVdF/HFP)-based gel polymer electrolytes towards a lithium electrode was studied by AC impedance spectroscopy technique. PVdF/HFP-based gel polymer electrolyte (GPE) was formed by immobilizing the lithium hexafluorophospate ($LiPF_6$) in a mixture of ethylene carbonate-dimethyl carbonate (EC-DMC) liquid electrolyte in the copolymer matrix. The impedance measurement was run during 10 days storage of a cell of Li/gel polymer electrolyte/Li. Results obtained were used to identify chargetransfer resistance, double layer capacitance and properties of passivation films. Ceramic filler of SnO_2 was introduced in the system in attention to improve the transport properties as well as to reduce the reactivity towards lithium electrode.

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