

**ELECTRICAL STUDIES ON POLYVINYLIDENE
FLUORIDE-HEXAFLUOROPROPYLENE (PVdF-HFP)
BASED POLYMER ELECTROLYTES COMPLEXED WITH
LITIUM BIS (OXATLATO) BORATE (LiBOB)**

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**Report submitted in partial fulfillment of the requirement
for the degree of
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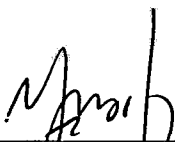
Final Year Thesis entitled “The Electrical Studies on Poly(vinylidene Fluoride-co-Hexafluoropropylene) (PVdF-HFP) Based Polymer Electrolytes Complexed with Lithium Bis (Oxalato) Borate (LiBOB)” submitted by Nor Farahah binti Sapwan in partial fulfillment of the requirements for the Degree of Bachelor of Science (Hons.) Physics, in Faculty of Applied Sciences, is approved by



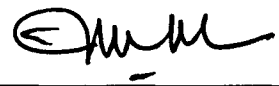
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ABSTRACT

Polymer electrolytes based on poly(vinylidene fluoride)-hexafluoropropylene (PVdF-HFP) complexed with lithium bis(oxalato) borate (LiBOB) have been prepared using direct dissolution technique. The complexation of salt with PVdF-HFP was confirmed by electrical and structural studies. LEs were first prepared by dissolving lithium salt, LiBOB in dimethyl sulfoxide (DMSO) using various molar concentrations of LiBOB. The optimum conductivity (0.8 M) of liquid electrolyte (LE) that measured by electrical impedance spectroscopy (EIS) was gelled with different concentration of PVdF-HFP. The highest conductivity of PGE with 4 wt.% was chosen as it completely been in gel form. The plot of $\log \sigma$ versus $1000/T$ for all systems implies that the systems follow the Arrhenius rule, in which conductivity is thermally assisted. The interaction between components also was studied using ATR-FTIR spectroscopy. Room temperature (28°C) conductivity of $3.99 \times 10^{-3} \text{ Scm}^{-1}$ was observed in DMSO-0.8 M LiBOB-4 wt.% PVdF-HFP polymer system.

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