IONIC CONDUCTION STUDY ON BIOPOLYMER ELECTROLYTES BASED CARBOXYMETHYL CELLULOSE/KAPPA CARRAGEENAN DOPED NH_4BR

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SHUI JUN KIT

Thesis submitted in fulfillment of the requirements
for the award of the degree of
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SUPERVISORS' DECLARATION

I hereby declare that I have checked the thesis and in my opinion, this thesis is adequate in terms of scope and quality for the award of the degree of Bachelor of Applied Science (Honor) Material Technology.

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STUDENT'S DECLARATION

I hereby declare that the work in this thesis is my own except for quotations and summaries which have been duly acknowledged. The thesis has not been accepted for any degree and is not concurrently submitted for award of other degree.

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LIST OF SYMBOLS

^{o}	Degree
^{o}C	Degree Celcius
ε_r	Dielectric Constant
ε_i	Dielectric Loss
σ	Electrical Conductivity
μ	Mobility
η	Number of Mobile Ions
%	Percentage
π	Pi
θ	Theta
A	Area
cm	Centimeter
cm^{-1}	Per centimeter
cm^2	Square Centimeter
D	Diffusion Coefficient
f	Frequency
g	Gram
Hz	Hertz
K	Kelvin
k	Boltzman Constant
M_i	Imaginary Parts of Modulus
M_r	Real Parts of Modulus
ml	Milliliter
n	Number Density
q	Charge of Electron
R_b	Bulk Impedance

LIST OF SYMBOLS

S	Siemens
s	Seconds
T	Temperature in Kelvin
t	Thickness
tan δ	Loss Tangent
wt. %	Weight Percentage
Z	Impedance
Z_i	Imaginary Parts of Complex Permitivity

LIST OF ABBREVIATIONS

CMC	Carboxyl Methylcellulose
EIS	Electrical Impedance Spectroscopy
FTIR	Fourier Transform Infrared Spectroscopy
KC	Kappa carrageenan
MgTf	Magnesium trifluoromethanesulfonate
NH_4Br	Ammonium bromide
NH_4I	Ammonium iodide
NH_4SCN	Ammonium thiocyanate
PCL	Poly(ε-caprolactone)
PEO	Polyethylene oxide
PVA	Polyvinyl Alcohol
P(VdF-HFP)	Poly(vinylidene fluoride-hexafluoropropylene)
SPE	Solid Polymer Electrolyte
XRD	X-Ray Diffraction