

**AC IMPEDANCE OF $\text{LiNi}_{0.7}\text{Co}_{0.2}\text{Al}_{0.1}\text{O}_2$ AND LiCoO_2 AT ROOM
TEMPERATURE**

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This Final Year Project Report entitled “**AC IMPEDANCE OF $\text{LiNi}_{0.7}\text{Co}_{0.2}\text{Al}_{0.1}\text{O}_2$ AND LiCoO_2 AT ROOM TEMPERATURE**” was submitted by Nur Saidah binti Mohamed, in partial fulfillment of the requirements for the Degree of Bachelor of Science (Hons.) Physics, in the Faculty of Applied Sciences and was approved by



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ABSTRACT

AC IMPEDANCE OF $\text{LiNi}_{0.7}\text{Co}_{0.2}\text{Al}_{0.1}\text{O}_2$ AND LiCoO_2 AT ROOM TEMPERATURE

New materials based on LiCoO_2 with some nickel and aluminium atoms substituted for other metals has become increasingly popular in cathode materials for Li-ion batteries. The purpose was to investigate AC impedance study of LiCoO_2 and $\text{LiNi}_{0.7}\text{Co}_{0.2}\text{Al}_{0.1}\text{O}_2$ by electrochemical impedance spectroscopy (EIS). EIS is employed to investigate the electrochemical properties of LiCoO_2 and $\text{LiNi}_{0.7}\text{Co}_{0.2}\text{Al}_{0.1}\text{O}_2$ cathode material. The results are interpreted on finding the conductivities of each material for pure cathode material and composite material by plotting Nyquist plots. The comparison conductivity between LiCoO_2 and $\text{LiNi}_{0.7}\text{Co}_{0.2}\text{Al}_{0.1}\text{O}_2$ for pure cathode material and composite material also has been investigated in this study. Results indicated that the conductivity of $\text{LiNi}_{0.7}\text{Co}_{0.2}\text{Al}_{0.1}\text{O}_2$ material is higher than LiCoO_2 material and the conductivity of composite material higher than pure cathode material.

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