

**CHARGE DISCHARGE STUDIES OF  $\text{LiNi}_{1-x}\text{Co}_x\text{Fe}_y\text{O}_2$  CATHODE  
MATERIALS**

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Degree of Bachelor of Science (Hons.) Industrial Physics  
in the Faculty of Applied Science  
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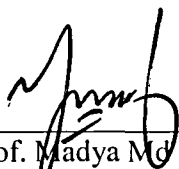
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This Final Year Project entitled “**Charge Discharge Studies of  $\text{LiNi}_{1-x}\text{Co}_x\text{Fe}_y\text{O}_2$  Cathode Materials**” was submitted by Nur Fatin Farhanah Binti Nazarudin, in partial fulfilment of the requirements for the Degree of Bachelor of Science (Hons.) Industrial Physics, in the Faculty of Applied Sciences, and was approved by



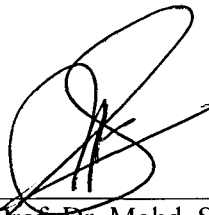
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## ABSTRACT

Three active materials are used for the fabrication of Li-ion cells. They are;  $\text{LiNi}_{0.8}\text{Co}_{0.1}\text{Fe}_{0.1}\text{O}_2$ ,  $\text{LiNi}_{0.7}\text{Co}_{0.2}\text{Fe}_{0.1}\text{O}_2$ , and  $\text{LiNi}_{0.6}\text{Co}_{0.3}\text{Fe}_{0.1}\text{O}_2$  using a mix and cast technique. The fabricated cathode was assembled in a coin cell configuration and all this was done in an Ar filled glove box. The anode used was lithium foil and the electrolyte used was 1M  $\text{LiPF}_6$  in EC/DMC (1/1 V/V). The separator used was microporous polypropylene film. The cell was tested using an automated battery cycler. The electrochemical charge discharge cycling was done by using a constant current of 1.0mA (charge-discharge) within a voltage range of 4.3V to 3.0V. Results show charge-discharge time for the three cathode materials from the first cycle to third cycle differs for different stoichiometries.