SYNTHESIZES AND ELECTRICAL TRANSPORT PROPERTIES OF $(La_{0.7-x}Nd_x)\ Ca_{0.3}MnO_3$ WITH SUBSTITUTIONS OF (x=0.00, 0.05, 0.10, 0.15 AND 0.20)

TUAN ZULKIFLI BIN TUAN MOHD

Final Year Project Report Submitted in Partial Fulfillment of the Requirement for the Degree of Bachelor of Science (Hons.) Industrial Physic in the Faculty of Applied Sciences Universiti Teknologi MARA

MAY 2010

This Final Year Project Report entitled "Synthesizes and Electrical transport Properties of $(La_{0.7-x}Nd_x)$ $Ca_{0.3}MnO_3$ with substitutions of (x=0.00, 0.05, 0.10, 0.15 and 0.20)" was submitted by Tuan Zulkifli bin Tuan Mohd, in partial fulfillment of the requirement for the degree of Bachelor of Science (Hons.) Industrial Physic, in the Faculty of Applied Sciences and was approved by

Madam Zakiah binti Mohamed
Supervisor
B.Sc (Hons.) Industrial Physic
Faculty of Applied Sciences
Universiti Teknologi MARA
40450 Shah Alam
Selangor

Assc. Prof Yusof Theeran
Project Coordinator
B.Sc (Hons.) Industrial Physic
Faculty of Applied Sciences
Universiti Teknologi MARA
40450 Shah Alam
Selangor

Mr Hj Mohd Isa Mohd Yusof
Head of Program
B.Sc (Hons.) Industrial Physic
Faculty of Applied Sciences
Universiti Teknologi MARA
40450 Shah Alam
Selangor

Date: 14 MAY 2010

ACKNOWLEDGEMENTS

Alhamdulillah and thanks to Allah for blessing me to finish this Final Year Project. After two semesters gathering a lot of information about CMR material and under went laboratory working about four months to collect all the necessary data in investigating of $(La_{0.7-x}Nd_x)\ C_{0.3}MnO_3$ material. Now, every thing is already completed and I represent my work in form of this thesis.

First of all I would like to express my appreciation and a lot of thanks to my supervisor, Madam Zakiah binti Mohamed for all of contribution she had done to complete this project. I am also would like to thanks to all seniors who had given their hand during under went the laboratory working.

My appreciation is also to all lecturers who had helped me and I want to take the opportunity to say thanks to the faculty for providing all the facilities and space which needed for completing the project.

Tuan Zulkifli bin Tuan Mohd

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ABSTRACT

Structure and electrical properties of $(La_{0.7-x}Nd_x)$ $Ca_{0.3}MnO_3$, with concentration of x=0.00 0.05, 0.10, 0.15 and 0.20

CMR material with nominal composition $(La_{0.7-x}Nd_x)$ $Ca_{0.3}MnO_3$ (x=0.00-0.20) were synthesize and it's electrical and structure properties were investigated by the conventional solid state reaction method. All the data is collected by using four point probe and XRD. The result showed metal – insulator temperature T_{MI} is shifted to lower temperature and the resistivity is increased by increasing the portion of Neodymium (Nd) substitution but interesting characteristic are displayed by x=0.15 and 0.20 the resistivity of both sample is drop drastically and the phenomenon is expected due to the properties of Nd . On the metallic region all samples are fitted well with combination of electron-electron and electron- magnon. The deceasing in the resistivity is suggested due to weaken of double exchange mechanism (DE). Existence of Nd into the perovskite had influence the bonding angle of Mn-O-Mn. e_g electron on the Mn^{3+} can not move to Mn^{4+} easily. From the data obtained and the previous study the structure of all samples is in orthorhombic, where $a \neq b \neq c$.