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Journal Name:	International Research Journal of Pure and Applied Chemistry
Manuscript Number:	2014_IRJPAC_11187
Title of the Manuscript:	Electronic Transport at Low temperature in Ni/Al/Ni Films
Type of the Article	

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This journal's peer review policy states that **NO** manuscript should be rejected only on the basis of '**lack of Novelty**', provided the manuscript is scientifically robust and technically sound.

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PART 1: Review Comments

	Reviewer's comment	Author's comment (if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)
Compulsory REVISION comments	Reviewer Comments 1) In Abstract, ... in the temperature range from 4 K to 300K has been measured However, in section 2., line 43: ... setup in the temperature range from 5 K to 300 K.... (contradictory) 2) Line 89: agreement with Nio thin film [18].... (should be NiO) 3) Line 99:.... Tabulated 4) Lines 186-189: should be deleted. 5) Lines 33-34: Title sould be Experimental Details, the rest of title should be deleted. 6) In Abstract, ... The resistivity variation with temperature of some of these films has been analyzed using semi-classical conductivity model of Boltzman which incorporates quantum	Experimental temperature range for resistivity studies has been corrected to 4.2K to 300K from 5K to 300K. Nio is corrected to NiO Title of the section 2 is corrected to Experimental. Ours is an experimental study, not theory. We studied electrical resistivity variation with temperature (4.2K to 300K) by employing four point method. Out of ten films, three exhibited pure semiconducting behaviour and rest of the films remarkably shown metal to semiconductor transition (MST) similar to what has been reported in the last two references (ZnO films).



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	corrections in to it... However, in section 2., line 43: Electrical resistivity was measured by following four point method in an Oxford Instruments make resistivity setup in the temperature range from 5 K to 300 K. How were measured electrical resistivities of films? (which method?) 7) Lines 25, 26: ...Hydrogen doping in ZnO has the potential to reveal interesting electrical and optical properties because of its tendency to form easy bonding with charged ions [13].... [13] is the unnecessary reference, it has no connection with this research. 8) in Line 41: ... The films were annealed to room temperature in the vacuum chamber.... If the films were annealed, Al-Ni intermetallic phase occurs with the increase in the temperature, and does not growth in a	Out of the seven films which exhibited MST, two have produced good amount of data both in semiconducting and metallic regions. These two were the films whose data has been analyzed using semi-classical conductivity expression due to Boltzman which incorporates quantum corrections. Metallic region data of the remaining five films which showed only a short tail in the semiconducting region has been analyzed using Matheissen's rule. Reference 13 and its related matter in the paper has been removed as was suggested by the reviewer. Films were not annealed separately and purposefully. They were deposited at 473K in the vacuum coating unit. After the deposition they were allowed to cool to room temperature overnight. So, no much scope for the formation of intermettalic phases like.
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	single direction. Because, the width of the diffraction peak and intensities, diffraction angles varie considerably both annealing and Al layer thickness. Therefore, in this study, XRD patterns of investigated all films should be given to be between $2\theta = 10^\circ - 90^\circ$. Also, Gaussian fit for the peak is unnecessary. 9) (h k l) indexs should be made for peaks, and crystall structures occured in result of annealing should be specified. Why is the $n = 1$, for distance between planes (d) obtained by Bragg's law? This is a correct conclusion? 10) When examining the microstructure of each film should be given the EDX analysis. 11) in Lines 61-62: ...These grain sizes obtained are of only few nanometers indicating that the present films are	Gaussian fit to the peak in the XRD spectrum has been removed as was suggested. The single peak observed has been indexed and found to be (111) texture. No EDX facility is available. So, no such study has been conducted. Since films are of nanometer thick. Grains naturally cab be in nanosize. A line mentioned in this context has been deleted. Conclusion section and abstract are now precise written to reflect on the actual results achieved. Grammar corrections are done to the large extent. Grammar corrections are done to the large extent. Redundancies are removed.
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	nanocrystalline in nature.... This sentence has very bad English grammar. In addition, because of thickness of films is nanosize, grain sizes will be already nanocrystallines. Therefore, thid sentence is unnecessary. 12) If the authors made an experimental study, the chart of electrical conductivity with temperature should be given for all of the films, and the readers should be compared. In this study, self resistance change with temperature was given for only three samples. Themselves of readers must be seen Tc temperatures. Otherwise, the research remains to be writing on paper. 13) Resistivity variation of NAN1, NAN3 and NAN7 films The conductivity data of these films has been analysed using Mott's small polaron hopping and variable range hopping models due to Mott's and Greaves.	
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Resistivity variation of NAN2, NAN4, NAN5, NAN6, NAN8, NAN9 and NAN10 films.

For $T < 150$ K, several attempts have been made to fit the data to $\rho = AT^5$, as dedicated by Matheissen's rule and also to Arrhenius expression $\rho = \rho_0 \exp(E/K_B T)$.

Resistivity variation of NAN4 and NAN5 films

the minima in the $\rho(T)$ curve has been accounted for quantum correction (QC) terms in the conductivity expression.

In such an experimental study, whether semiconductor of these films is decided according to the results of hall measurements or not. However, in this study, according to what is called to be metallic, and is fit according to Matthiesen's rule? According to what is called to be semiconductor, and is used Mott's small polaron hopping and variable range hopping models due to Mott's and Greaves? According to what is made the quantum correction? Any information has not been given to explain. The same method for all the films is used in the



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	experimental study, the graphics are drawn, and according to these results, the changes in the physical properties of the films should be described. The results shown in this study don't interesting. Much of the experimental preliminaries are very basic stuff found in a standard textbooks. Please also enlist the aid of a colleague conversant with English writing skills to help you edit the manuscript; there are minor but distracting of the English grammar and sentence structure.	
<u>Minor</u> REVISION comments		
<u>Optional/General</u> comments		