



**SDI Review Form 1.6**

Journal Name:	<a href="#">Physical Science International Journal</a>
Manuscript Number:	Ms_PSIJ_30061
Title of the Manuscript:	<b>Finding on the Similarity between the Two Empirical Formulas: Temperature Dependence of Volumetric Expansion of Gas and Temperature Dependence of Resistivity of Conductor</b>
Type of the Article	<b>Original Research Article</b>

**General guideline for Peer Review process:**

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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(<http://www.sciencedomain.org/page.php?id=sdi-general-editorial-policy#Peer-Review-Guideline>)



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**PART 1: Review Comments**

	<b>Reviewer's comment</b>	<b>Author's comment</b> <i>(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)</i>
<b>Compulsory</b> REVISION comments	<p>The manuscript presents an technological interesting tool that it can allow the indirect resistivity determination of the good electric conductors, basing on the specific volume and seek turns.</p> <p>It is well writing, but it lacks experimental results to prove the proposed equation. Considering that specific volume and resistivity measures of good conductors are very easy of measuring at laboratories.</p> <p>The bibliography is suitable, however it needs to be updated, the most recent citation is of 2014.</p> <p>The author bases their studies on the atomic vibration between gasses and solids (metals good drivers) and that this phenomenon is similar between gasses and metals, what doesn't shows the reality and it explains the mentioned deviations, even for the good drivers, considering that for the gasses there is not the crystalline structures interference.</p> <p>Completing, this equation must be tested and the results presented with a justification that illustrates the difference between the structures of crystalline solids and gases atomic vibration.</p>	<p>There are some unclear descriptions to explain the purpose of this study. Manuscript has been revised for more clear descriptions of the purpose and the scope of this study. ( see the revised abstract , introduction and conclusions <b>with red coloured</b>)</p> <p>The main purpose of this study is finding a similarity between the two empirical formulas, as mentioned in title. Additionally, the reason of this similarity has been examined.</p> <p>This study does not propose a new equation. This study is focused on finding similarity.</p> <p>In table 1, the data are referenced additionally. (see the revised Table 1)</p> <p>I understand that the deviations of temperature coefficient shown in figure 1 may be brought from the molecular bonding structure. In addition, gas is free of this molecular bonding.</p> <p>Finally, the major purpose of this study is finding similarity between the two well-known empirical formulas.</p> <p>(ABSTRACT)</p> <p><b>This paper finds and examines the similarity between the temperature dependence of volumetric expansion</b></p>



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		<p>of gases and the temperature dependence of resistance of conductors. In the 1780s, Jacques Charles came to know that the volume of the gas was proportionally increasing as temperature increased. He also stated that the rate of volume expansion was not dependent on the kinds of gases. In the early 19<sup>th</sup> century, Georg Ohm discovered the electric resistance. It was known that the electric resistivity of conductors changed with temperature. At the room temperature, the measured temperature coefficients of resistance for silver, copper, aluminum and gold are 0.0038, 0.0039, 0.0039 and 0.0034 respectively. When the temperature coefficient, <math>1/273</math>, in Charles's law is expressed in a decimal, it indicates 0.0037. The finding of the similarity between the temperature dependence of volumetric expansion of gases and the temperature dependence of resistance of conductors is as follows: first, they have a linear relationship with respect to the temperature change; second, temperature coefficients are very close to each other; third, they are not dependent on the kinds of materials, lastly, the empirical formulas are also convertible each other mathematically. In this study, I here find that there is a similarity between the two empirical formulas. The temperature dependence of atomic vibration is suggested as the cause of the similarity. In addition, it is suggested that the volumetric expansion of gas could be related with the atomic vibration. This finding of similarity will be helpful for our understanding in the features of intrinsic behaviors of a gas molecular motion</p>
<b>Minor</b> REVISION comments	No comments	
<b>Optional/General</b> comments	No comments	