



SDI Review Form 1.6

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| Journal Name: | Physical Science International Journal |
| Manuscript Number: | Ms_PSIJ_27566 |
| Title of the Manuscript: | Chemical and Electrochemical Deposition of Ag onto Si for Fabrication of Si Nanowires and the Seebeck Effect Characterization |
| Type of the Article | Review paper |

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.

To know the complete guideline for Peer Review process, reviewers are requested to visit this link:

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



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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) |
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| <u>Compulsory</u> REVISION comments | <p>The paper reports some results by the authors, but not a review of literature results in the field. So I could characterize the paper as a contributed and not a Review paper.</p> <p>Concerning the content of the paper, many important parameters in the fabrication and characterization of the samples are missing. Consequently, the discussion of the obtained results concerning the Seebeck coefficient is questionable and not supported by the experiment.</p> <p>More specifically:</p> <p>a) The structure and morphology of MACE Si NWs depend strongly on the resistivity of the starting Si wafer. MACE of lightly doped p- or n- type Si results in compact Si NWs, while for a highly doped substrate the SiNWs are porous. The resistivity of the starting Si wafer is thus</p> <p>a necessary parameter in order to understand the obtained results. The structure of the Si NWs is important for the understanding of the Seebeck coefficient.</p> <p>b) The length of the Si NWs is another important parameter. The authors should measure this length and give the corresponding result for the different samples. The top view SEM images are not so important for the understanding of the Seebeck measurements. More important are cross sectional SEM images, which can reveal</p> | |



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| | <p>the Si NW length, diameter and structure. Without knowing the length of the SiNWs, the Seebeck measurements cannot be fully understood and explained.</p> <p>c) I do not understand the SEM image of Fig. 4. What is it shown? The oxidation state of the surface cannot be revealed by an SEM image. So the statement that we see an oxidized surface is completely wrong.</p> <p>d) The authors speak about Ag dendrites, however they do not show such dendrites in their paper. On the contrary, they state that there is no Ag on the surface of some of the samples. Where did Ag go? In the solution, as they claim? I do not really believe it. There is no evidence for that. The proposed etching mechanism is not fully explained and understood.</p> <p>e) The figures of the EDX results are so small that we cannot see them. It is hard to see the corresponding peaks. By zooming on the images we cannot clearly resolve the axes.</p> <p>f) Concerning the Seebeck measurements, the registration of a Seebeck coefficient as a function of time is not correct. The authors should measure the mean voltage difference and the mean temperature difference from which the Seebeck coefficient is deduced.</p> <p>g) I do not understand the discussion on S SiAg60 ~ 3 S bulk. From the</p> | |
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| | <p>given numbers the increase in S is much higher.</p> <p>h) The Seebeck coefficient is an important parameter, however the only knowledge of this parameter is not enough in order to characterize the thermoelectric properties of a material. For the same material, the thermal and electrical conductivity should be known. This should be pointed out in the discussion and conclusions. The phrase in the conclusion that “based on the results... the thermoelectric performance improvement ... is promising...” is not correct.</p> | |
| <u>Minor</u> REVISION comments | | |
| <u>Optional/General</u> comments | | |

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