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CORRIGENDUM

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Corrigendum: Enhancement of polycrystalline silicon solar cells efficiency using indium nitride particles (2015 *J. Opt.* 17 105903)

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The authors would like to add below statement to explain the enhancement of the solar cell using indium nitride nanoparticles:

Semiconductor materials can downshift light that could be useful to solar cell applications where high energy photons will be downshifted to low energy photons. These materials can also scatter light which has been found in previous studies [1–3]. Also, both of these phenomena can contribute towards the performance enhancement of a solar cells.

In this study, we reported an improvement of solar cell performance using InN-Ps. These nanoparticles can downshift light as shown in figure 5 of the original article. These nanoparticles can also scatter light, which can be seen in the reflectivity study shown in the original article as figure 9. However, the decrease in reflectivity seems to be on the lower end side and we believe an erroneous characterization is the reason for this more than anything else.

In our previous study, we found a significant decrease in reflection after coating the solar cells with InN-Ps [4]. The optical characterization of the cells during that study was conducted before the fabrication of silver contacts. On the other hand, the current paper focuses on the polycrystalline silicon solar cells which were outsourced and already had contacts fabricated on the cells. We believe this might be the reason that led to a rather inconclusive reflectivity study, which failed to show the true prospect of InN-Ps in reducing reflection. Unfortunately, we do not have any access to the samples used for this study, but we did conduct a study previously on c-Si HIT cells and with 230 nm InN-Ps. During that study, reflection measurement was conducted before the deposition of silver contact and that also showed a reduction in reflection, as can be seen in figure C1.

We also investigated the percentage of increase in EQE and IQE and showed it in figure C2. It shows, for a broader wavelength range, that the percentage increase in EQE is higher than IQE. This suggests that though InN-Ps are downshifting light, solar cells performance improvement are mostly due to the light scattering. A similar technique was used before to study the effect of Si nanoparticles on solar cells [5].

A relatively high absorption peak can be seen between 200 and 320 nm in figure 4 in the original article, and at the same time within this region the InN-Ps coated cell shows relatively lower reflection compared to the reference cell, as be seen in figure 9 in the original article. This anti-reflection property of the InN-Ps may be the reason for not seeing any decrease in quantum efficiency, due to the absorption property of InN-Ps within this shorter wavelength range.

To conclude, we believe downshifting of light by InN-Ps to be possible, but scattering is playing the major role in improving the performance of the solar cell. That is the reason for not seeing any absorption component of InN-Ps in EQE curve.

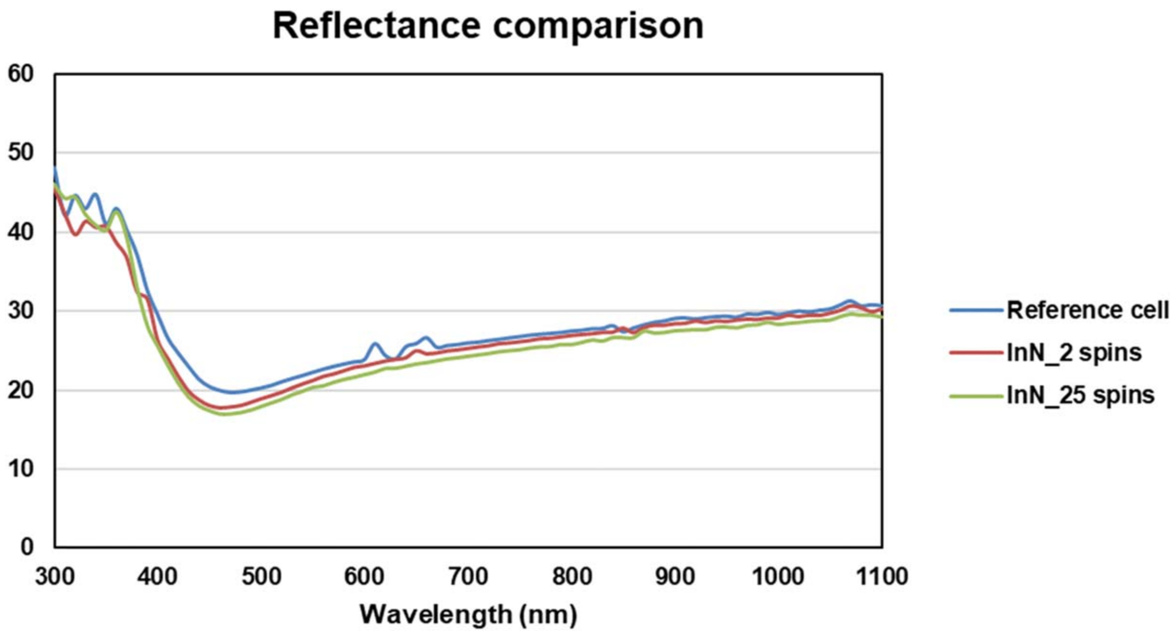

Figure C1. Effect of InN-Ps on c-Si HIT solar cells. Data shows the effect of spins on the overall reflection.

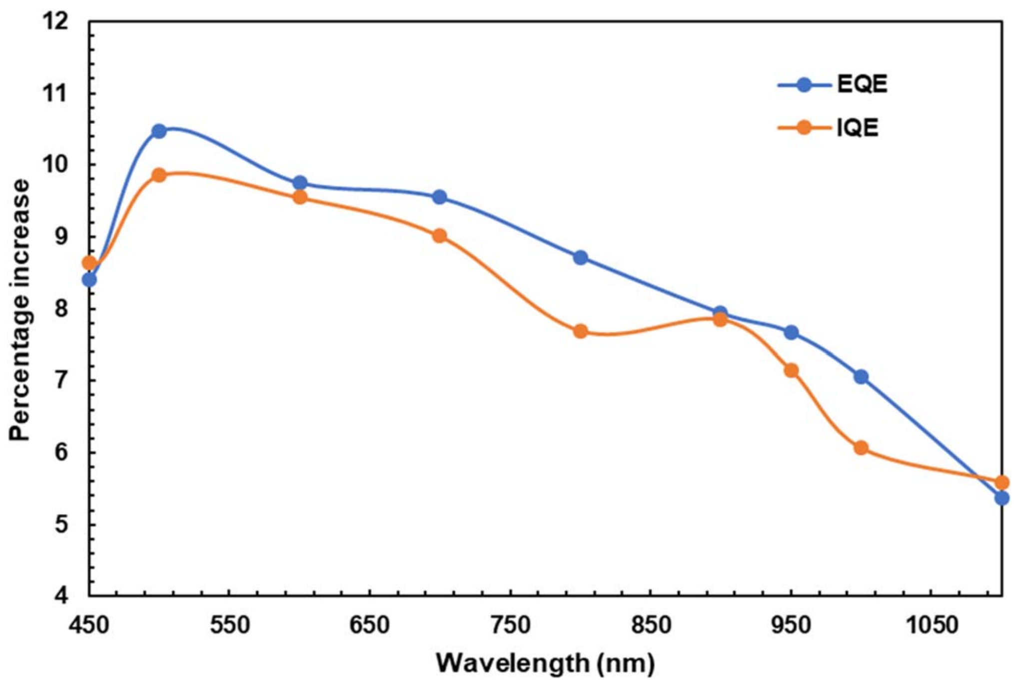

Figure C2. Percentage increase in EQE and IQE due to InN-Ps.

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