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An all metal solar cell

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Previous Status Quo

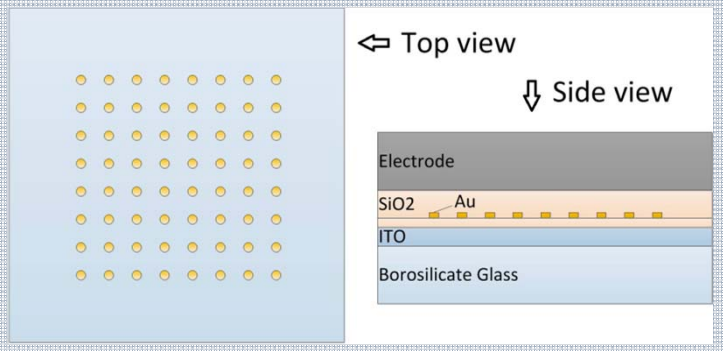
Traditional semiconductor solar cells, though in wide commercial use, have limitations related to cutoff wavelength, low theoretical efficiency limit, and high material costs.

New Insights

An all metal solar cell based on localized surface plasmon resonance of metal nano particles does not have these disadvantages, but has not yet been investigated sufficiently, nor been characterized.

Project Details

- The production parameters of the cell are under investigation. IV measurements, Kelvin probe force microscopy, SEM, and integrating spheres are being used to characterize the cell.
- Electron beam lithography and electron beam evaporation is used to fabricate the cell.
- The cell is based on a model provided by Ensol, a company located in Bergen, Norway.



Challenges

Requirements for moving forward include a better theoretical understanding about the separation and extraction of hot electrons, and access to better characterization tools.

Next Steps

Collaboration with people and labs who are experienced in nano optics would help greatly in the development of this cell.

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