

Function and Structure of Solar Cells

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The basic concepts of solar cells and the requirements for photovoltaic solar energy conversion are reviewed. All present solar cells are found to follow the same principles. They consist of an absorber embedded between layers with selective transport properties, semi-permeable membranes for electrons on one side and for holes on the other side. Their structure is shown to be a consequence of the absorption and transport properties of the materials. Good transport properties of the absorber allow planar geometries as in Si solar cells, whereas bad transport properties require an interpenetration of the semi-permeable membranes as in the Graetzel cell or the organic solar cell.