CLAIMS

WHAT IS CLAIMED IS:

1. A method, comprising:
    (a) providing a silicon solar module with a first voltage output, wherein the silicon solar module comprises a top glass panel;
    (b) forming a perovskite layer on said top glass panel;
    (c) fabricating one or more perovskite solar cells from said perovskite layer, wherein said one or more perovskite solar cells produce a voltage substantially matched to said voltage output of said silicon solar module; and
    (d) electrically connecting said silicon solar module to said one or more perovskite solar cells.
2. The method of claim 1, wherein said fabricating comprises use of a laser scribe to define said one or more perovskite solar cells.
3. The method of claim 1, wherein said one or more perovskite solar cells are a plurality of perovskite solar cells.
4. The method of claim 3, wherein said plurality of perovskite solar cells are connected in series.
5. The method of claim 1, further comprising applying a plurality of contacts to said one or more perovskite solar cells to electrically couple said one or more perovskite solar cells.
6. The method of claim 1, further comprising applying an encapsulant to said one or more perovskite solar cells.
7. The method of claim 6, wherein said encapsulant is a thermal-plastic polyolefin.
8. The method of claim 7, wherein said encapsulant is ethyl-vinyl acetate.
9. The method of claim 1, further comprising applying an edge seal to said one or more perovskite solar cells.
10. A tandem solar module, comprising:

    a silicon solar panel comprising (i) a plurality of silicon solar cells connected in series and (ii) a top glass sheet, wherein said plurality of silicon solar cells are connected in series and combined have a first open circuit voltage;

    a perovskite solar panel disposed on an underside of said top glass sheet of said silicon solar panel, wherein said perovskite solar panel comprises a plurality of segments, wherein each segment of said plurality of segments comprises a plurality of laser-scribed strips of perovskite, wherein said plurality of laser-scribed strips of perovskite within a

segment are connected in series to generate a second open circuit voltage that is substantially the same as said first open circuit voltage; and

an interconnect connecting said plurality of silicon solar cells and said plurality of segments of said perovskite solar panel in parallel.

11. The device of claim 10, wherein said plurality of segments comprises from about 10 to about 200 segments.
12. The device of claim 10, wherein said silicon solar panel is a top contact solar panel, an integrated back contact solar panel, or a shingled solar panel.
13. The device of claim 10, wherein said silicon solar panel and said perovskite solar panel are connected to a same junction box.
14. The device of claim 10, wherein said silicon solar panel and said perovskite solar panel have a substantially similar area.
15. The device of claim 10, wherein said plurality of laser-scribed strips of perovskite are connected via a P1/P2/P3 scheme.