CLAIMS

1. A device comprising:

at least two electrically distinct layers being mechanically stacked, wherein the at least two electrically distinct layers are configured to be moved, replaced, or exchanged from the device, the at least two electrically distinct layers are not electrically connected, and operate independently within the device, and the at least two electrically distinct layers comprising:

a bottom layer comprising silicon and comprising a transparent top surface, and

one or more upper layers,

wherein each of the one or more upper layers comprises at least one transmissive solar cell comprising a cadmium alloy, is configured to convert light energy into first electricity, and is configured to transmit unconverted portions of the light energy towards the bottom layer, and

wherein the bottom layer comprises at least one solar cell configured to convert at least part of the unconverted portions of the light energy into second electricity.

2. The device of claim 1, wherein the device comprises a reflective layer below the bottom layer.

3. A modular apparatus comprising:

at least two electrically distinct modules being mechanically stacked, wherein the at least two electrically distinct modules are configured to be moved, replaced, or exchanged from the modular apparatus, the at least two electrically distinct modules are not electrically connected, and each of the at least two electrically distinct modules generates electricity independent of another of the at least two electrically distinct modules of the modular apparatus, and the at least two electrically distinct modules comprising:

a silicon module comprising silicon, a transparent top surface, and a plurality of solar cells, and

a transmissive module comprising a plurality of transmissive solar cells, wherein each transmissive solar cell of the plurality of transmissive solar cells comprises a cadmium alloy,

wherein the transmissive module is configured to convert light energy received on a first side into first electricity, is adjacent to the transparent top surface, and is configured to transmit unconverted portions of the light energy to the silicon module, and

wherein the silicon module is configured to convert at least part of the unconverted portions of the light energy into second electricity.

4. The modular apparatus of claim 3, wherein the mechanical stacking of the at least two electrically distinct modules vertically aligns each of the plurality of solar cells with each of the plurality of transmissive solar cells.

5. A system, comprising:

a plurality of modular apparatuses,

wherein each modular apparatus comprises at least two electrically distinct modules being mechanically stacked therein,

wherein the at least two electrically distinct modules are configured to be moved, replaced, or exchanged from the modular apparatus,

wherein the at least two electrically distinct modules are not electrically connected within the modular apparatus and operate independently, and

wherein the at least two mechanically electrically distinct modules comprise:

a bottom module, and

one or more upper transmissive modules,

wherein each of the one or more upper transmissive modules is configured to convert light energy into first electricity and transmit unconverted portions of the light energy towards the bottom module,

wherein each bottom module is configured to convert at least part of the unconverted portions of the light energy into second electricity;

the system further comprising at least two strings,

wherein each string of the at least two strings corresponds and electrically connects to a layer spanning across the plurality of modular apparatuses and is electrically distinct from each remaining string of the at least two strings.

6. The modular apparatus of claim 3, wherein the mechanical stacking to vertically align the plurality of solar cells with the plurality of transmissive solar cells reduces a negative effect on a power conversion efficiency of the silicon module caused by mechanically stacking the transmissive module.

7. The system of claim 5, wherein the mechanical stacking of the at least two electrically distinct modules vertically aligns a plurality of solar cells of the bottom module with a plurality of transmissive solar cells of the transmissive module.

8. The system of claim 7, wherein the mechanical stacking to vertically align the plurality of solar cells with the plurality of transmissive solar cells reduces a negative effect on a power conversion efficiency of the bottom module caused by mechanically stacking the one or more upper transmissive modules.