Claims

1. An ultra-thin transmissive cadmium (Cd) alloy solar cell (100) comprising, in this order:

a substrate section (105);

a conductive section (110);

a window section (115) comprising cadmium selenide (CdSe);

an absorber section (120) comprising a transmissive cadmium (Cd) alloy and having a section thickness (141) of 400 nanometers or less,

wherein the transmissive cadmium (Cd) alloy comprises cadmium telluride (Cd),

wherein the section thickness (141) is the width of the absorber section (120) from the window section facing surface to the back contact section surface; and

a back contact section (125) comprises one or more transmissive conductors or semiconductors,

further comprising in this order:

a second conductive section (130); and/or

a second substrate section (135),

wherein the ultra-thin transmissive cadmium (Cd) alloy solar cell (100) comprises:

at least ten percent transmissivity for one or more portions of a first irradiance wavelength range between three hundred fifty nanometers (nm) to approximately eight hundred twenty-five nanometers (nm), and

at least sixty-five percent transmissivity for one or more portions of a second irradiance wavelength range between to approximately eight hundred twenty-five nanometers (nm) to one thousand two hundred nanometers (nm).

2. The ultra-thin transmissive cadmium (Cd) alloy solar cell (100) of claim 1, wherein the window section (115) comprises a one hundred or less nanometer (nm) section thickness.

3. The ultra-thin transmissive cadmium (Cd) alloy solar cell (100) of claim 1, wherein a combined thickness of the window (115) and absorber sections (120) provides the at least ten percent transmissivity for the one or more portions of the first irradiance wavelength range and the at least sixty-five percent transmissivity for the one or more portions of the second irradiance wavelength range for the ultra-thin transmissive cadmium (Cd) alloy solar cell.

4. The ultra-thin transmissive cadmium (Cd) alloy solar cell (100) of claim 1, wherein the ultra-thin transmissive cadmium (Cd) alloy solar cell comprises a fifteen percent (15%) or greater transmissivity for the one or more portions of the first irradiance wavelength range.

5. The ultra-thin transmissive cadmium (Cd) alloy solar cell (100) of claim 1, wherein the ultra-thin transmissive cadmium (Cd) alloy solar cell comprises a seventy percent (70%) or greater transmissivity for the one or more portions of the second irradiance wavelength range.

6. The ultra-thin transmissive cadmium (Cd) alloy solar cell of claim 1, wherein the conductive section comprises an indium-doped tin oxide or a fluorine-doped tin oxide.

7. The ultra-thin transmissive cadmium (Cd) alloy solar cell (100) of claim 1, wherein the section thickness (141) of the absorber section is 300 nm or less.

8. The ultra-thin transmissive cadmium (Cd) alloy solar cell (100) of claim 1, wherein the second substrate section (135) comprises a glass or a plastic.

9. The ultra-thin transmissive cadmium (Cd) alloy solar cell (100) of claim 1, wherein the one or more transmissive conductors or semiconductors comprises at least one metal, metal alloy, or semiconductor material.

10. The ultra-thin transmissive cadmium (Cd) alloy solar cell (100) of claim 1,

wherein a combined thickness of the window section (115), the absorber section (120), and the back contact section (125) has a seven hundred or less nanometer (nm) thickness.

11. The ultra-thin transmissive cadmium (Cd) alloy solar cell (100) of claim 1, wherein the window section (115) has a one hundred or less nanometer (nm) section thickness.