Claims

1. A system for generating electricity, the system comprising:

a first panel at least largely transmissive for light having a wavelength within a first wavelength range, the first panel being arranged to reflect a portion of the received light within a second wavelength range; and

a second panel positioned at an angular orientation relative to the first panel, the second panel including at least one solar cell module and being arranged to receive the light within the second wavelength range reflected from the first panel;

wherein the system is arranged such that the at least one solar cell module to absorb at least a portion of the light within the second wavelength range to generate electricity;

wherein the first and second panels are rotatable about respective axes.

2. The system of claim 1 comprising a frame and wherein the first and second panels are coupled to the frame such that the first and second panels are rotatable relative to the frame.

3. The system of any one of the preceding claims comprising a drive arrangement coupled to the first and second panel and arranged to drive the first and second panels about respective axes.

4. The system of any one of the preceding claims wherein the first wavelength range incudes at least a portion of the wavelength range of visible light and the second wavelength range includes at least a portion of the wavelength range of infrared light.

5. The system of any one of the preceding claims wherein the second wavelength range also includes at least a portion of the wavelength range of ultraviolet light.

6. The system of any one of the preceding claims wherein the first panel has a reflective surface which forms an acute angle with a surface of the second panel, wherein the acute angle is in the range of 10° to 80°, preferably 20° to 70°, more preferable, 30° to 60°.

7. The system of any one of the preceding claims wherein the second panel at least largely obstructs the transmission of light having a wavelength in the visible and/or infrared wavelength range.

8. The system of any one of preceding claim 3 and preceding claims 4 to 7 when dependent on claim 3 wherein the drive arrangement is arranged to adjust a rotational position of the first and second panels by rotating the first and second panels about the respective axes whereby reflection of infrared radiation from the first panel to the second panel can be optimised and/or the second panel may at least partially form an obstruction for sun light thereby having a shading effect.

9. The system of any one of the preceding claims wherein the at least one solar cell module is one of a plurality of solar cell modules, which form an array of solar cell modules comprising a plurality of rows of solar cell modules, preferably the solar cell modules are electrically series connected in each of the plurality of rows of solar cell modules, and each of the plurality of rows of solar cell modules are electrically parallel connected.

10. The system of any one of the preceding claims wherein the first and second panels form a unit and the system comprises a plurality of units, wherein the axes about which the first and second panels of the units are moveable are parallel to each other such that a louvre-type arrangement is formed.

11. The system of claim 10 wherein the units are coupled such that the units can be driven by a single drive arrangement

12. The system of claim 10 wherein each unit comprises a dedicated drive arrangement or groups of the units comprise a dedicated drive arrangement.

13. The system of any one of the preceding claims wherein the first panel has a low-emissivity coating ("Low-E coating").

14. The system of any one of the preceding claims wherein the first panel comprises a polymeric material which is largely transmissive for visible light.

15. The system of claim 14 wherein the polymeric material is doped with dye or pigment materials and wherein the dye or pigment materials are chosen such that visible light is filtered by the dye or pigment materials such that transmission of at least some of the light that is not beneficial for the growth of the plants is obstructed.

16. The system of any one of the preceding claims wherein the at least one solar cell module is selected to have a relatively high absorption efficiency in the infrared wavelength band, such as CIS or CIGS-based solar cell modules.

17. The system of any one of preceding claim 3 and preceding claims 4 to 16 when dependent on claim 3, further comprising a

controller arranged to control operation of the drive arrangement to drive the first and second panels to a desired position, preferably the desired position is a position in which generation of electricity is maximised or a desired reduced intensity of visible light within a building or structure is achieved (shading).

18. The system of any one of the preceding claims comprising a battery which in use is charged using electricity generated by the at least one solar cell module.

19. The system of any one of the preceding claims comprising a light source, which comprises LED light sources, such as LED light sources for emitting UV, blue, green, red and far-red light.

20. The system of claim 19 when dependent on claim 18 comprising a controller arranged to operate the LED light sources during night time using electricity provided by the battery.

21. The system of any one of the preceding claims 1 to 20 wherein the system is in use mounted below an at least largely transparent panel of a building or structure.

22. The system of any one of the preceding claims 1 to 20 wherein the system is in use positioned such that the axes of first and second panels are oriented at least approximately in an east-west orientation and wherein the first and second panels are elongated and also oriented in an east-west direction.

23. The system of any one of the preceding claims 1 to 20 wherein the system is in use positioned independent from, or

in the absence of, a building or structure within open space, preferably the system is positioned over growing plants.