CLAIMS

1. A photovoltachromic device, comprising

a photovoltaic cell, and

a transparent-reflective switchable device in light communication with the photovoltaic cell,

wherein the transparent-reflective switchable device is switchable between a reflective mode in which light falling thereon is reflected to the photovoltaic cell, and a transmission mode in which light falling thereon is directed through the transparent-reflective switchable device, by applying a voltage across the transparent-reflective switchable device.

2. The photovoltachromic device according to claim 1, wherein the transparent-reflective switchable device is a reversible electrodeposition device.

3. The photovoltachromic device according to claim 1 or 2, wherein the photovoltaic cell and the transparent-reflective switchable device are arranged on a transparent substrate or between a pair of opposing transparent substrates.

4. The photovoltachromic device according to claim 3, wherein the photovoltaic cell is arranged substantially vertical to a surface of the transparent substrate, and the transparent-reflective switchable device is arranged inclined at an angle to the photovoltaic cell.

5. The photovoltachromic device according to claim 4, wherein the angle is in the range from 45º to 55º.

6. The photovoltachromic device according to claim 4 or 5, wherein the photovoltaic cell is one of a double-sided photovoltaic panel or two photovoltaic panels arranged in a back-to-back configuration, and wherein two transparent-reflective switchable devices are present, with each transparent-reflective switchable device arranged on either side of the photovoltaic cell.

7. The photovoltachromic device according to claim 6, wherein the photovoltaic cell is two photovoltaic panels arranged in a back-to-back configuration and defining a gap therebetween, the gap being operable as a channel for flow of a heat transfer medium.

8. The photovoltachromic device according to claim 6 or 7, wherein arrangement of the photovoltaic cell and the two transparent-reflective switchable devices is repeated for one or more times in the photovoltachromic device.

9. The photovoltachromic device according to any one of claims 1 to 8, wherein the photovoltaic cell is a solar cell.

10. The photovoltachromic device according to any one of claims 1 to 9, wherein voltage is in the range from 1V to 5V.

11. The photovoltachromic device according to any one of claims 1 to 10, wherein the photovoltachromic device is a self-powered photovoltachromic device.

12. An apparatus comprising the photovoltachromic device according to any one of claims 1 to 11, wherein the apparatus is a window or a door.

13. A method of modulating light into a building using the photovoltachromic device according to any one of claims 1 to 11, the method comprising positioning the photovoltachromic device at a facade of the building which is adapted to allow light to pass through into the building, and operating the photovoltachromic device to modulate light into the building.

14. The method according to claim 13, wherein the facade of the building is an opening, a window or a door.

15. The method according to claim 13 or 14, wherein the building is a greenhouse.