According to an aspect, there is provided a display for displaying fluorescence of a gemstone having naturally occurring phosphors, comprising: a top portion having an interior cavity; an insert mounted in the interior cavity of the top portion; a compact ultraviolet LED assembly mounted at a mounting angle in the insert, the LED assembly having: an LED circuit; a 3 watt 365 nm ultraviolet LED diode disposed on the LED circuit; an optical collimator having a parabolic lens to focus the emitted LED radiation to a less than 15° spread; a bottom portion connected to the top portion, and having a recess for containing a compact battery for powering the LED assembly; and a central holder/deck positioned in the bottom portion over the battery for retaining the gemstone so that the gemstone is retained less than 3 inches from the LED assembly and in a direct path of the emitted collimated LED radiation of the LED assembly; such that the gemstone seated in the central holder/deck emits a corona of strong visible fluorescence while the ultraviolet radiation is not seen.

Herein disclosed is a display box for displaying fluorescence of a gemstone having naturally occurring phosphors. The box has a top portion having an interior cavity. An insert is provided mounted in the interior cavity of the top portion. A compact ultraviolet LED assembly is mounted at a mounting angle in the insert. The LED assembly has: an LED circuit, a 3 watt 365 nm ultraviolet LED diode disposed on the LED circuit, and an optical collimator having a parabolic lens to focus the emitted LED radiation to a less than 15° spread. A bottom portion of the box is provided in hinged relation with the top portion. The bottom portion has a recess for containing a compact battery for powering the LED assembly. A central holder/deck is positioned in the bottom portion over the battery for retaining the gemstone so that the gemstone is retained in a direct path of the emitted collimated LED radiation of the LED assembly. The box is structured such that in operation the gemstone seated in the central holder/deck emits a corona of strong visible fluorescence while the ultraviolet radiation and the LED assembly are not seen.

CLAIMS

What is claimed is:

1. A display for displaying fluorescence of a gemstone having naturally occurring phosphors, comprising:

a top portion having an interior cavity;

an insert mounted in the interior cavity of the top portion;

a compact ultraviolet LED assembly mounted at a mounting angle in the insert, the LED assembly having:

an LED circuit;

a 3 watt 365 nm ultraviolet LED diode disposed on the LED circuit;

an optical collimator having a parabolic lens to focus the emitted LED radiation to a less than 15° spread;

a bottom portion connected to the top portion, and having a recess for containing a compact battery for powering the LED assembly; and

a central holder/deck positioned in the bottom portion over the battery for retaining the gemstone so that the gemstone is retained less than 3 inches from the LED assembly and in a direct path of the emitted collimated LED radiation of the LED assembly;

such that the gemstone seated in the central holder/deck emits a corona of strong visible fluorescence while the ultraviolet radiation is not seen.

2. The display of claim 1, wherein the compact battery is a lithium ion cell.

3. The display of claim 2, wherein the lithium ion cell has an output of at least 1000 mAh.

4. The display of claim 1, wherein the mounting angle of the LED assembly is 60°.

5. The display of claim 1, wherein the emitted radiation is collimated to have an 8-10° spread.

6. The display of claim 1, further comprising a programmable chipset in communication with the LED assembly for thermal management.

7. The display of claim 11, further comprising a pressure switch on one or the other of the top and bottom portions, in communication with the LED assembly for turning off power to the LED assembly when the box is closed.

8. The display of claim 11, further comprising a cycling switch in communication with the LED assembly for producing display effects while the box is open.

9. The display of claim 1, wherein the parabolic lens shape is selected to avoid the emitted ultraviolet radiation striking surfaces of the display other than the gemstone.

10. The display of claim 11, wherein the position, size and mounting angle of the LED assembly are selected to avoid contact between the LED assembly and the gemstone when the box is closed.

11. The display of claim 1, wherein the display is in the form of a box, and wherein the top and bottom portions of the box are connected to each other in hinged relation.

12. The display of claim 1, wherein the LED assembly is mounted such that it is not seen.