Claims

1. A smoke detector, comprising:

an interior chamber;

a light source arranged within the smoke detector to emit light into the interior chamber;

an electro-optical light receiver arranged within the smoke detector to receive direct and/or indirect light from the light source, wherein at least one of the light source and the electro-optical light receiver is arranged external to the interior chamber, and wherein the electro-optical light receiver is configured to only convert a particular range of light to photocurrent and/or wherein the light source is configured to only emit light in the particular range of light;

an external housing encompassing the interior chamber, the light source and the electro-optical light receiver;

electrical connectors in electrical communication with the electro-optical light receiver, wherein the electrical connectors extend out beyond the external housing; and

a shield arranged exterior to the external housing, wherein the shield surrounds a space within the smoke detector between the interior chamber and a connection side of the external housing, wherein the shield further spans at least a portion of the connection side of the external housing, wherein the shield comprises openings which the electrical connectors extend through, wherein the shield at least partially surrounds the light source or the electro-optical light receiver that is arranged external to the interior chamber, and wherein the shield comprises a material which attenuates a majority amount of light within the particular range of light.

2. The smoke detector of claim 1, wherein the shield spans a majority portion of the connection side of the external housing.

3. The smoke detector of claim 1, wherein the shield is arranged in a groove between a circumferential edge and a base plate of the connection side of the external housing.

4. The smoke detector of claim 1, wherein the light source is configured to:

emit infrared light, and wherein the particular range of light comprises at least a portion of a light spectrum between approximately 700 nm and approximately 1 mm; and/or

emit ultraviolet light, and wherein the particular range of light comprises at least a portion of a light spectrum between approximately 10 nm and approximately 400 nm; and/or

emit visible light, and wherein the particular range of light comprises at least a portion of a light spectrum between approximately 390 nm and approximately 700 nm.

5. The smoke detector of claim 1, wherein the external housing comprises a material which passes a majority amount of light within the particular range of light.

6. The smoke detector of claim 1, wherein the interior chamber comprises exterior walls configured to reflect and/or absorb a majority amount of light within the particular range of light.

7. The smoke detector of claim 1, wherein the light source is disposed within the interior chamber, and wherein the electro-optical light receiver is disposed outside of the interior chamber.

8. The smoke detector of claim 1, wherein the shield comprises polypropylene, polyphenylene ether, or black neoprene rubber.

9. A smoke alarm, comprising:

a smoke detector of any of the smoke detectors of claims 1-8; and

a base coupled to the connection side of the smoke detector, wherein the connection side of the smoke detector includes an exterior surface of the external housing comprising the electrical connectors, and wherein the base comprises an audible alarm and a power supply in electrical communication with the electrical connectors.

10. A smoke alarm system, comprising:

an alarm system; and

a plurality of smoke detectors coupled to the alarm system, wherein at least one of the plurality of smoke detectors is one of the smoke detectors of claims 1-8.

11. The smoke detector of any of the smoke detectors of claims 1-8, wherein the shield comprises:

a contiguous circumventing band having a diameter between approximately 5 cm (2 inches) and approximately 30.5 cm (12 inches); and

a base plate coupled to and substantially centered over or under the contiguous circumventing band, wherein the base plate comprises notches exposing portions of the contiguous circumventing band.

12. The smoke detector of claim 11, wherein the base plate comprises three notches arranged to expose portions of the contiguous circumventing band that are 90 degrees apart from each other.

13. The smoke detector of claim 11, wherein the notches extend inward from a circumferential edge of the base plate by less than approximately 2.5 cm (1.0 inch).

14. The smoke detector of any of the smoke detectors of claims 1-8, wherein the shield comprises:

a contiguous circumventing band having a diameter between approximately 5 cm (2 inches) and approximately 30.5 cm (12 inches); and

a base plate coupled to and substantially centered over or under the contiguous circumventing band, wherein the base plate comprises three notches disposed inward from a circumferential edge of the base plate by less than approximately 2.5 cm (1.0 inch), and wherein the three notches are arranged such that:

a first notch and a second notch of the notches are approximately 180 degrees apart from each other relative to a periphery of the contiguous circumventing band; and

a third notch of the notches is approximately 90 degrees apart from the first notch and the second notch relative to a periphery of the contiguous circumventing band.

15. The smoke detector of claim 11 or 14, wherein the contiguous circumventing band is circular; or wherein the contiguous circumventing band is in the shape of a square, a rectangle, a triangle or an oval; or wherein the base plate covers 90% or more of the area bordered by the contiguous circumventing band.