Claims

1. A device for colorimetric measurement of a sample, the device comprising:

an elongated tubular body comprising a proximal end and a distal end, the distal end arranged to receive the sample;

an optical assembly coupled to the proximal end of the elongated tubular body, the optical assembly comprising a light source and a photodetector;

a tunnel defined in the elongated tubular body and divided into a first tunnel section and a second tunnel section, each tunnel section having an equal semi-circular cross-section, the first tunnel section arranged to transmit light from the light source to the sample, the second tunnel section arranged to transmit light scattered by the sample to the photodetector; and

a measurement device configured for colorimetric measurement of the sample based on the scattered light detected by the photodetector.

2. The device according to claim 1, wherein the light source is disposed at a side of the elongated body and the optical assembly further comprises a mirror arranged to reflect light from the light source into the first tunnel section.

3. The device according to claim 1 or 2, wherein internal surfaces of the first and second tunnel sections comprise reflective coatings, such that:

the light transmitting through the first tunnel section is reflected from the semi-circular internal surface of the first tunnel section to the sample; and

the scattered light transmitting through the second tunnel section is reflected from the semi-circular internal surface of the second tunnel section to the photodetector.

4. The device according to any one of claims 1 to 3, wherein the measurement device comprises a voltmeter.

5. The device according to any one of claims 1 to 4, wherein the light source comprises a set of light emitting diodes (LEDs).

6. A method for colorimetric measurement of a sample, the method comprising:

transmitting light from a light source through a first tunnel section of a tunnel defined in an elongated tubular body to a sample at a distal end of the elongated tubular body;

scattering, by the sample, the light received from the light source;

transmitting the scattered light from the sample through a second tunnel section of the tunnel to a photodetector at a proximal end of the elongated tubular body, the first and second tunnel sections divided from each other, each tunnel section having an equal semi-circular cross-section;

detecting the scattered light by the photodetector; and

performing colorimetric measurement of the sample based on the scattered light detected by the photodetector.

7. The method according to claim 6, wherein transmitting the light from the light source to the sample comprises reflecting the light from the light source from a mirror into the first tunnel section.

8. The method according to claim 6 or 7, wherein internal surfaces of the first and second tunnel sections comprise reflective coatings, such that:

the light transmitting through the first tunnel section is reflected from the semi-circular internal surface of the first tunnel section to the sample; and

the scattered light transmitting through the second tunnel section is reflected from the semi-circular internal surface of the second tunnel section to the photodetector.