

Claims

[Claim 1] A method of harmonising the penetration depth of the light of a first PPG sensor and the light of a second PPG sensor for monitoring an analyte in blood, comprising the step(s) of:

obtaining an analyte-pulse using a first PPG sensor in a first wavelength;

obtaining a blood-pulse using a second PPG sensor in a second wavelength;

the analyte having an absence of a significant absorbance in the second wavelength;

adjusting the intensity of the light emitted by the first PPG sensor and/or the intensity of the light emitted by the second PPG sensor until the shape of the analyte-pulse and the shape of the blood-pulse are similar.

[Claim 2] A method of harmonising the penetration depth of the light of a first PPG sensor and the light of a second PPG sensor for monitoring an analyte in blood as claimed in claim 1, further comprising the step of

comparing the size of the analyte-pulse with the size of the blood-pulse to monitor the analyte.

[Claim 3] A method of harmonising the penetration depth of the light of a first PPG sensor and the light of a second PPG sensor for monitoring an analyte in blood as claimed in claim 1, wherein

the analyte in the blood in an artery of a life subject is glycated haemoglobin;

the first wavelength being selected from

- 1) about 275nm
- 2) about 340nm to 350nm
- 3) about 415nm to 420nm
- 4) about 540nm; or
- 5) about 580nm; and

the second wavelength being in the red or infrared range.

[Claim 4] A method of harmonising the penetration depth of the light of a first PPG sensor and the light of a second PPG sensor for monitoring an analyte in blood as claimed in claim 1, comprising the further step(s) of:

providing a third light source, the third light source emitting light in a third wavelength into the tissue of the subject to obtain a second-analyte-pulse;

adjusting the intensity of the light emitted by the light source, the intensity of the light emitted by the second light source and/or the intensity of the light emitted by the third light source until the shape of the analyte-pulse, the shape of the second-analyte-pulse and the shape of the blood-pulse are similar.

[Claim 5] A method of harmonising the penetration depth of the light of a first PPG sensor and the light of a second PPG sensor for monitoring an analyte in blood as claimed in claim 4, further comprising the step of:

subtracting the amplitude of the second-analyte-pulse from the amplitude of the analyte-pulse to provide a reduced analyte-pulse;

comparing the size of the reduced analyte-pulse with the size of the blood-pulse to monitor the analyte.

[Claim 6] A method of expressing a quantity of an analyte in blood, comprising a ratio of the size of a pulse obtained by measuring the absorbance by the analyte of light of a first wavelength to the size of a pulse obtained by measuring the absorbance by blood of light of a second wavelength;

the analyte having an absorbance spectrum that shows the absence of any significant absorbance peak in the second wavelength; wherein

the pulse of the first wavelength has the same shape as the pulse of the second wavelength.

[Claim 7] A method of expressing a quantity of an analyte in blood as claimed in claim 6, wherein

the analyte is glycated haemoglobin;

the first wavelength being selected from

- 1) about 275nm
- 2) about 340nm to 350nm
- 3) about 415nm to 420nm
- 4) about 540nm; or
- 5) about 580nm; and

the second wavelength being in the red or infrared range.

[Claim 8] A method of expressing a quantity of an analyte in blood, as claimed in claim 7, further comprising the step of:

determining that the quantity of glycated haemoglobin is indicative of pre-diabetes.

[Claim 9] A method of expressing a quantity of an analyte in blood, as claimed in claim 7, further comprising the step of:

providing calibration to convert the expression of the quantity glycated haemoglobin into physical quantity of glycated haemoglobin.

[Claim 10] A method of expressing a quantity of an analyte in blood, as claimed in claim 7, further comprising the step of:

providing information long term monitoring of diet control for diabetes patient and for detecting pre-diabetes.

[Claim 11] A blood analyte monitor comprising

i) a photoplethysmocharty sensor assembly having one light source and two optical sensors,

the at least one light source capable of generating light of a first wavelength and light of a second wavelength through the tissue of a subject to be detected by a respective one of two sensors; or

ii)_ a photoplethysmocharty sensor assembly having two light sources and an optical sensor,

the two light sources capable of generating consecutively light of a first wavelength and light of a second wavelength through the tissue of a subject to be detected by the optical sensors; wherein the blood analyte monitor further comprises an adjustment module capable of adjusting the intensity of the light of the first wavelength and/or the light of the second wavelength in response to the shape of a pulse signal obtain by the first wavelength and the shape of a pulse signal obtained by the second wavelength.

[Claim 12] A blood analyte monitor, as claimed in claim 11 wherein

the adjustment module is capable of adjusting the intensity of the light of the first wavelength and/or the light of the second wavelength to provide that the shape of the pulse signal obtain by the first wavelength and the shape of the pulse signal obtained by the second wavelength are similar.

[Claim 13] A blood analyte monitor, as claimed in claim 12, wherein

the photoplethysmocharty sensor assembly comprises a first photoplethysmocharty sensor and a second photoplethysmocharty sensor;

the first photoplethysmocharty sensor having a light source which emits light in the first wavelength and an optical sensor which detects light in the first wavelength;

the second photoplethysmocharty sensor having a light source which emits light in the second wavelength and an optical sensor which detects light in the second wavelength.

[Claim 14] A blood analyte monitor as claimed in claim 12, wherein the first wavelength is selected from

- 1) about 275nm
- 2) about 340nm to 350nm
- 3) about 415nm to 420nm
- 4) about 540nm; or
- 5) about 580nm; and

the second wavelength being in the red or infrared range.

[Claim 15] A blood analyte monitor as claimed in claim 12, wherein

the photoplethysmocharty sensor assembly is capable of further generating light of a third wavelength through the tissue of a subject to be detected by the at least one sensor;

the adjustment module capable of adjusting the intensity of the light of the first wavelength, the light of the second wavelength and the light of the third wavelength to provide that the shape of the pulse signal obtain by the first wavelength, the shape of the pulse signal obtained by the second wavelength and the shape of a pulse signal obtain by the third wavelength are similar.

[Claim 16] A blood analyte monitor, as claimed in anyone of claim 11,

wherein the analyte is glycated haemoglobin.