adapted to transmit optical radiation having multiple wavelengths into fingertip tissue and the detector assembly is adapted to receive the optical radiation after attenuation by the fingertip tissue is a first shell and a second shell hinged to the first shell. A spring is disposed between the shells and urges the shells together. An emitter pad is fixedly attached to the first shell and configured to retain the emitter assembly. A detector pad is fixedly attached to the second shell and configured to retain the detector assembly. A detector aperture is defined within the detector pad and adapted to pass optical radiation to the detector assembly. A contour is defined along the detector pad and generally shaped to conform to a fingertip positioned over the detector aperture.

[0008] Another aspect of a physiological sensor is a first shell, a second shell hinged to the first shell and a spring disposed between and urging together the shells. The spring is configured so as to create a pivot point along a finger gripped between the shells that is substantially behind a fingertip. A pad is configured to position the fingertip.

[0009] A further aspect of a physiological sensor provides housing elements comprising pads and shells. A sensor assembly is mounted within the housing elements. Pad features position a fingertip relative to the sensor assembly. The housing elements are urged against the fingertip so as to removably attach the sensor assembly to the fingertip.

BRIEF DESCRIPTION OF THE DRAWINGS

[0010] **FIG. 1** is a perspective view of a physiological measurement system utilizing a multiple wavelength sensor;

[0011] FIGS. **2**A-C are perspective views of multiple wavelength sensor embodiments;

[0012] **FIG. 3** is a general block diagram of a multiple wavelength sensor and sensor controller;

[0013] **FIG. 4** is an exploded perspective view of a multiple wavelength sensor embodiment;

[0014] **FIG. 5** is a general block diagram of an emitter assembly;

[0015] **FIG. 6** is a perspective view of an emitter assembly embodiment;

[0016] **FIG. 7** is a general block diagram of an emitter array;

[0017] **FIG. 8** is a schematic diagram of an emitter array embodiment;

[0018] **FIG. 9** is a general block diagram of equalization;

[0019] FIGS. **10**A-D are block diagrams of various equalization embodiments;

[0020] FIGS. **11**A-C are perspective views of an emitter assembly incorporating various equalization embodiments;

[0021] **FIG. 12** is a general block diagram of an emitter substrate;

[0022] **FIGS. 13-14** are top and detailed side views of an emitter substrate embodiment;

[0023] **FIG. 15-16** are top and bottom component layout views of an emitter substrate embodiment;

[0024] **FIG. 17** is a schematic diagram of an emitter substrate embodiment;

[0025] **FIG. 18** is a plan view of an inner layer of an emitter substrate embodiment;

[0026] **FIG. 19** is a general block diagram of an interconnect assembly in relationship to other sensor assemblies;

[0027] **FIG. 20** is a block diagram of an interconnect assembly embodiment;

[0028] **FIG. 21** is a partially-exploded perspective view of a flex circuit assembly embodiment of an interconnect assembly;

[0029] **FIG. 22** is a top plan view of a flex circuit;

[0030] **FIG. 23** is an exploded perspective view of an emitter portion of a flex circuit assembly;

[0031] **FIG. 24** is an exploded perspective view of a detector assembly embodiment;

[0032] **FIGS. 25-26** are block diagrams of adjacent detector and stacked detector embodiments;

[0033] **FIG. 27** is a block diagram of a finger clip embodiment of an attachment assembly;

[0034] **FIG. 28** is a general block diagram of a detector pad;

[0035] FIGS. **29**A-B are perspective views of detector pad embodiments;

[0036] FIGS. **30**A-H are perspective bottom, perspective top, bottom, back, top, side cross sectional, side, and front cross sectional views of an emitter pad embodiment;

[0037] FIGS. **31**A-H are perspective bottom, perspective top, top, back, bottom, side cross sectional, side, and front cross sectional views of a detector pad embodiment;

[0038] FIGS. **32**A-H are perspective bottom, perspective top, top, back, bottom, side cross sectional, side, and front cross sectional views of a shoe box;

[0039] FIGS. **33**A-H are perspective bottom, perspective top, top, back, bottom, side cross sectional, side, and front cross sectional views of a slim-finger emitter pad embodiment;

[0040] FIGS. **34**A-H are perspective bottom, perspective top, top, back, bottom, side cross sectional, side, and front cross sectional views of a slim-finger detector pad embodiment;

[0041] FIGS. **35**A-B are plan and cross sectional views, respectively, of a spring assembly embodiment;

[0042] FIGS. **36**A-C are top, perspective and side views of a finger clip spring;

[0043] FIGS. **37**A-D are top, back, bottom, and side views of a spring plate;

[0044] FIGS. **38**A-D are front cross sectional, bottom, front and side cross sectional views of an emitter-pad shell;

[0045] FIGS. **39**A-D are back, top, front and side cross sectional views of a detector-pad shell;

[0046] **FIG. 40** is a general block diagram of a monitor and a sensor;