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**Wuori**

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(54) **NON-INVASIVE BLOOD ANALYTE MEASURING SYSTEM AND METHOD UTILIZING OPTICAL ABSORPTION**

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(51) **Int. Cl.**<sup>7</sup> ..... **A61B 5/00**

(52) **U.S. Cl.** ..... **600/322; 600/310**

(58) **Field of Search** ..... 600/309-310, 600/322-326, 316, 476, 473

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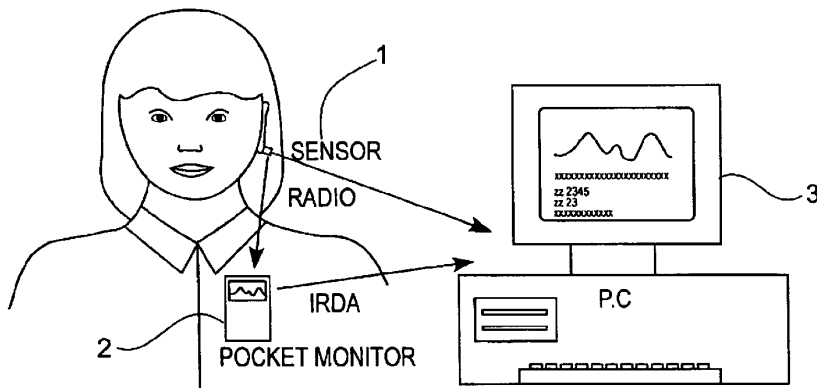
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(57) **ABSTRACT**

A device and method for measuring the concentration of analytes in the blood of a portion of tissue. The device includes a sensor module, a monitor, and a processor (separate from or integral with the sensor module). The sensor module includes a radiation source for emitting radiation to the tissue; a collimator and narrow band filter for processing the radiation after it has transmitted through or been reflected by the tissue; and one or more sensors for sensing the transmitted or reflected radiation. The one or more sensors send a signal to the processor which algorithmically converts the radiation using linear regression or orthogonal functions to determine the concentration of one or more blood analytes. The device self-calibrates to eliminate error caused by variables such as skin character. The sensor module is integrated to reduce size and weight such that it is inobtrusive, and the monitor is compact for transport

**31 Claims, 11 Drawing Sheets**



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APL1054

Fig. 1

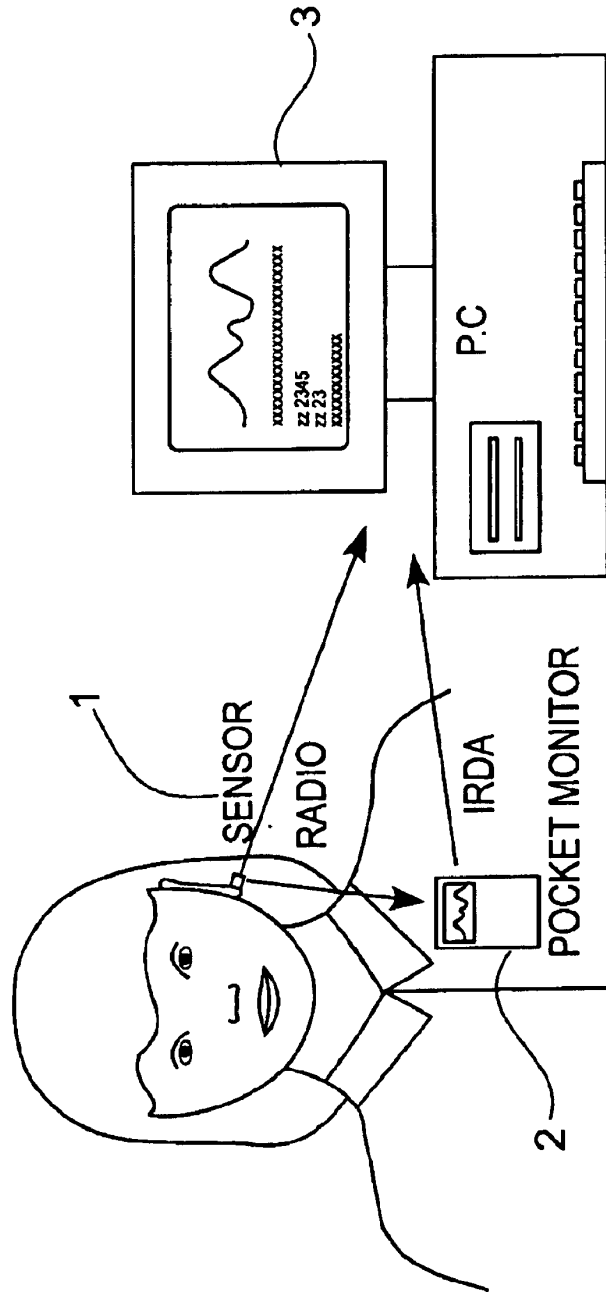
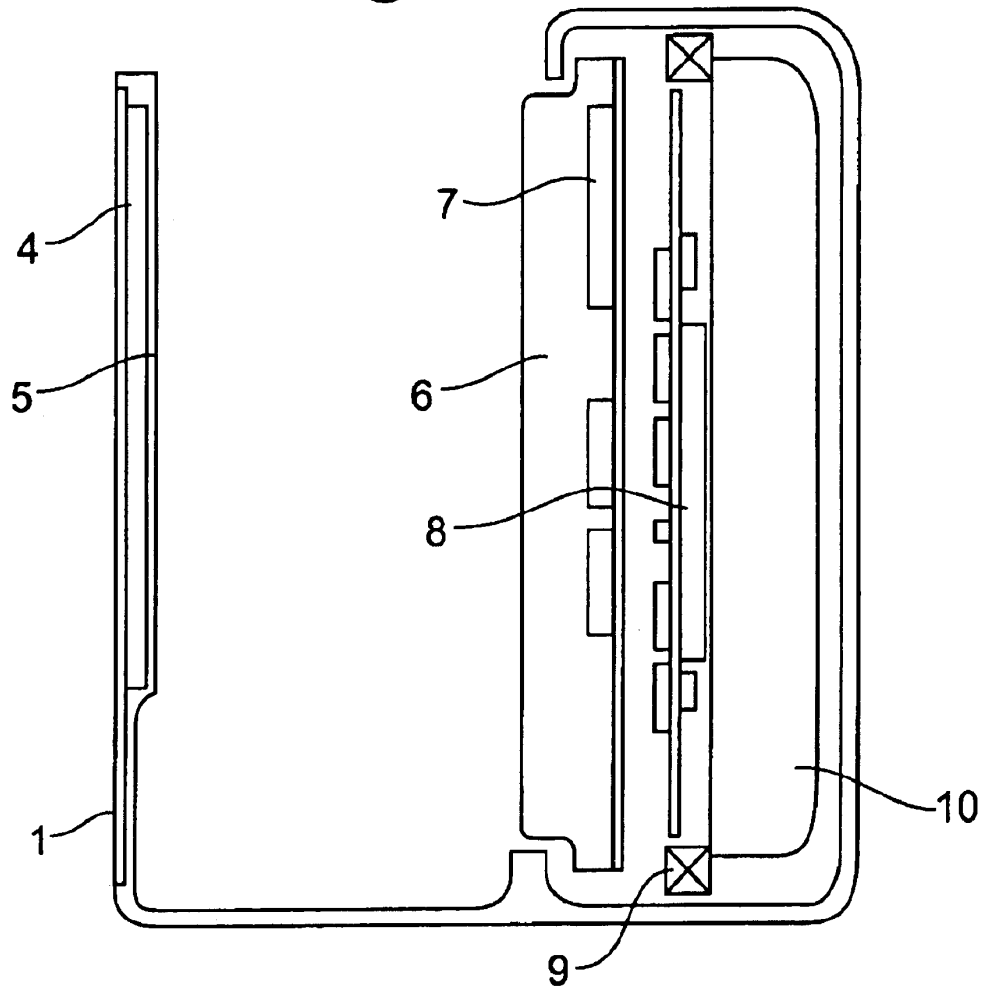


Fig. 2



**Fig. 3**

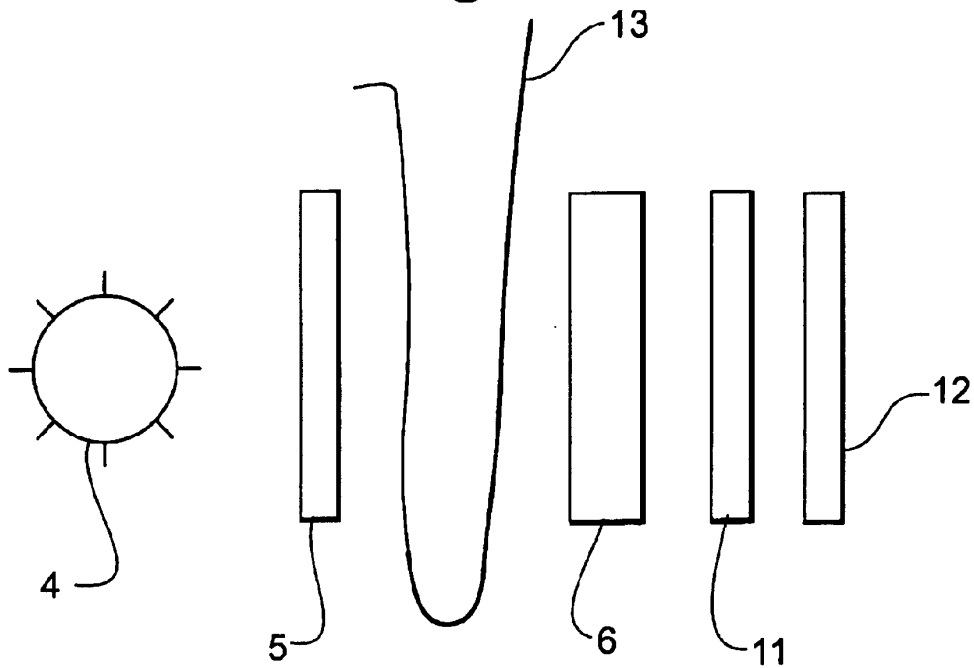
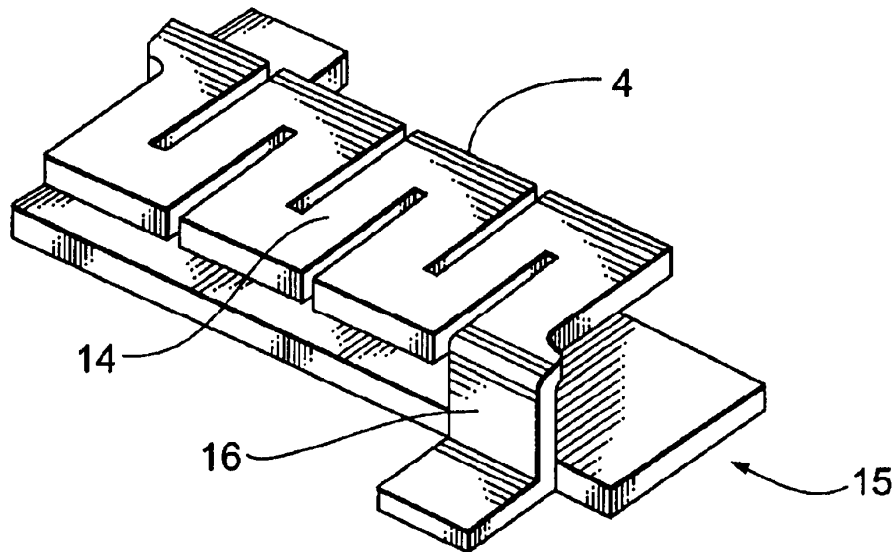


Fig. 4



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