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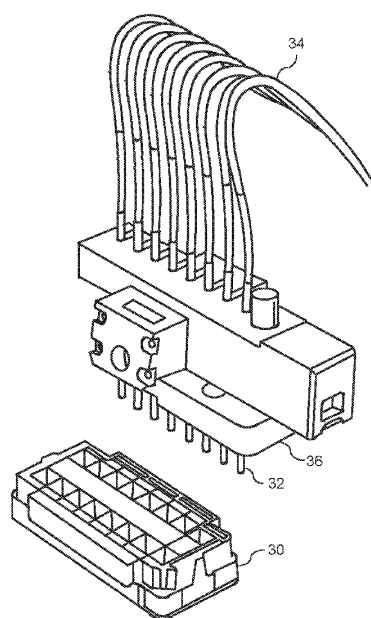


FIG. 1

(57) Abstract: A system and process is disclosed for measuring a fluorophore in a sample, such as a sample of a biological material. The process and system is particularly well suited to measuring fluorescent lifetimes of many different biological parameters. The system includes a time-of-flight sensor that can operate at a modulation rate capable of measuring fluorescent lifetimes that are extremely short, such as lasting only a few nanoseconds. Although the system and process have broad applicability, the system and process are particularly well suited for measuring metabolic characteristics of cells, such as pH, oxygen, and temperature.

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