PORTABLE DETECTION SYSTEM FOR DETECTING A PATHOGEN OR VIRUS

Technical Field

[0001] The present invention relates generally to a portable detection system for detecting a pathogen or virus and an associated detachable probe.

Background

[0002] Systems and methods for detecting pathogens or viruses, including methods such as PCR techniques and DNA sequencing, and systems such as automated microbial identification systems and immuno-diagnostic assay systems, require large and expensive instrumentation that is generally not suitable for on-site measurements.

Summary

[0003] It is an object of the present invention to substantially overcome, or at least ameliorate, one or more disadvantages of existing arrangements.

[0004] Disclosed are arrangements which seek to address the above problems by providing a portable detection system utilising an optical system that is used for determining a change in power intensity of output power at a resonant wavelength that corresponds with the detection of a pathogen or virus.

[0005] According to a first aspect of the present disclosure, there is provided a portable detection system for detecting a pathogen or virus, the portable detection system comprising: at least one light source for generating an input optical signal; at least one optical sensor comprising at least one optical fibre having at least one tapered sensing region with at least one coating that reacts with a pathogen being detected, wherein the optical sensor is arranged to receive the input optical signal, communicate the input optical signal through the tapered sensing region and communicate an output optical signal from the tapered sensing region; at least one photodetector for detecting power intensity of the output optical signal, wherein the photodetector is arranged to generate an output signal based on a change in power intensity of the output power at a resonant wavelength that corresponds with the pathogen; and at least one microcontroller for controlling the light source, optical sensor and photodetector; wherein the portable detection system is arranged to cause an output to be generated based on the output signal, wherein the output is associated with the pathogen being detected.

[0005a] There is also disclosed a detachable optical probe for use in the portable detection system as described, the optical probe comprising a sensor interface for interfacing with the portable detection system, and an optical sensor, wherein the optical sensor comprises an optical fibre having at least one tapered sensing region with at least one coating that reacts with a pathogen being detected, wherein the optical sensor is arranged to receive an input optical signal generated by at least one light source, communicate the input optical signal through the tapered sensing region and communicate an output optical signal from the tapered sensing region.