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**Shachar et al.**

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(54) **DETECTION OF CARDIAC TROPONIN OR BIOLOGICAL MARKERS VIA SHEAR HORIZONTAL SURFACE ACOUSTIC WAVE BIOSENSOR USING A WET-DRY BIOANALYTICAL TECHNIQUE**

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(71) Applicant: **Sensor Kinesis Corp.**, Los Angeles, CA (US)

(57) **ABSTRACT**

(72) Inventors: **Yehoshua Shachar**, Santa Monica, CA (US); **Marlon S. Thomas**, Riverside, CA (US)

The illustrated embodiments include a method of operating a SAW sensor to detect a sample in a fluid which includes the steps of: providing a SAW sensor with a functionalized detection lane in a handheld, portable assay and sensor system; maintaining the functionalized detection lane of the SAW sensor dry until the sample is fluidically disposed in the detection lane; fluidically disposing the sample in the functionalized detection lane; removing fluid the functionalized detection lane to concentrate the sample in the functionalized detection lane to increase the probability of a specific antibody-antigen interaction; washing the functionalized detection lane so that substantially only the specific antigen-antibody interaction remains in the functionalized detection lane; removing fluid from the functionalized detection lane again; and measuring concentration of the sample while the functionalized detection lane is fluid-free.

(73) Assignee: **Sensor Kinesis Corp.**, Los Angeles, CA (US)

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