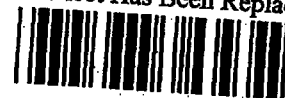


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57,712

A B S T R A C T

PRACTICAL IMPLEMENTATIONS FOR ION MOBILITY SENSOR

A system for signalling the presence of selected ion species in a gaseous sample of an ion mobility sensor (10), having a unidirectional field provided between first and second electrodes (16, 18) positioned a selected distance apart. An ionization source (35) generates ions in the sensor and a trigger controller (42) allows ions to enter the region (12) between the first and second electrodes at a time t_1 . The ions then arrive at the second electrode at a time t_2 . A transimpedance amplifier (38) converts the ion charges to voltage signals. The presence of selected ion species is determined by circuitry that is activated by the trigger controller at t_2 . The species are preferably analyzed by directing the amplifier output to an analog to digital converter (56) and then to a digital signal processor (58). The ions may alternatively be analyzed by generating a logic pulse representing a selected ion species when the amplifier output exceeds a preset value. An alarm signal is output when the logic pulse is coincident at an AND gate (46) with a logic pulse representing the species' travel time from the first electrode to the second electrode.