through the channel to default path **68** (without operation of selective transport mechanism **76**). A stream, as used herein, is a succession of moving particles created by entry into, and movement of the particles along, the channel. The succession may be relatively steady or intermittent and may introduce particles into the channel one by one, that is, in single file, or two or more at once in a side-by-side or random arrangement, among others. In some embodiments, the diameter of the channel may be small enough to restrict the particles to movement in single file.

[**0029**] The nonselective transport mechanism may operate by any suitable mechanism. For example, the nonselective transport mechanism may operate by exerting a force on a fluid in which the particles are disposed, to promote bulk fluid flow and concomitant bulk particle flow. Alternatively, this transport mechanism may exert a force on the particles relative to the fluid, to promote bulk particle flow through the fluid. The nonselective transport mechanisms may apply a positive or negative pressure to the fluid, generally upstream (toward the input mixture) or downstream (toward the receiver structures), respectively, of channel **54**, so that there is a pressure drop along the channel. Exemplary nonselective transport mechanisms may include pressurized gas, a positive displacement pump (such as a syringe pump), a vacuum, and/or a peristaltic pump, among others. Other exemplary nonselective transport mechanisms may include electrodes arrayed to provide dielectrophoretic-based movement of the particles, for example, using traveling wave dielectrophoresis to propel a mixture of particles along the channel.

[**0030**] Sorter **50** also may include selective transport mechanism **76** that cooperates with nonselective transport mechanism **74**. The selective transport mechanism may be any mechanism(s) configured to selectively move a subset of one or more particles of a mixture along a different path than other particles of the mixture.

[**0031**] The selective transport mechanism may be configured to act on individual particles or sets of particles of the mixture. In some embodiments, the particles of stream **58** may be spaced sufficiently so that single particles may be displaced from the stream. Alternatively, the particles may not be spaced sufficiently, so that two or more particles may be displaced together. In either case, an enrichment of the mixture for a particular type(s) of particle, particularly a minor particle, may occur.

[**0032**] The selective transport mechanism may be pulse-activated, to provide a transient action on selected particles. Pulse-activated, as used herein, means activated by a transient signal pulse or a by a plurality of transient signal pulses. The transient signal pulses may be produced as needed to sort particles, generally separated by irregular time intervals, rather than being a steady signal or periodic signals occurring at regular intervals. Exemplary signal(s) may be an electrical signal (such as a current or voltage pulse) or an optical pulse that activates a phototransistor, among others.

[**0033**] The transient action on the selected particles and/or the transient signal pulses that activate the transport mechanism may be fast, that is, lasting for less than about one second. In some examples, the transient action may be a pressure pulse that lasts less than about ten milliseconds or less than about one millisecond, depending on parameters such as fluid viscosity, channel dimensions, channel geometry, etc.

[**0034**] The selective transport mechanism may have any suitable maximum frequency of transport. The maximum frequency of transport is the maximum frequency of pressure pulses that can be produced per second and therefore the maximum number of particles that can be displaced by the selective transport mechanism per second. In some examples, the maximum frequency may be at least about 100 hertz or at least about one kilohertz.

[**0035**] Selective mechanism **76** may be configured to operate concurrently with nonselective mechanism **74**, that is, selective transport mechanism **76** may displace selected particles **62** from a particle stream created by operation of the nonselective transport mechanism. In some embodiments, the selective transport mechanism may be configured to exert a pressure pulse locally on a fluid volume in channel **54**, for example, on a fluid segment or fraction **78** disposed adjacent second outlet **66**, to direct particles **62** along second path **70**.

[**0036**] Exemplary selective transport mechanisms may be formed by thin-film electrical devices, such as thin-film heaters (for example, resistive layers) and piezoelectric elements, among others. Such thin-film electrical devices may be actuated rapidly with an actuation pulse to provide a transient pressure pulse. Thin-films, as used herein, are any films that are formed on a substrate. The thin-films may be formed by any suitable method, such as vapor deposition, sputtering, magnetron-based deposition, and/or plasma-enhanced deposition, among others. Individual layers of the thin-films may have any suitable thickness, or a thickness of less than about 500 μm, 100 μm, or 20 μm. Alternatively, or in addition, the individual thin-film layers may have a thickness of greater than about 10 nm, 20 nm, or 50 nm.

[**0037**] Alternative sorter unit **80**, also including portions shown here in phantom outline, may include a second channel **81** disposed adjacent first channel **54**. Second channel **81** may include an inlet **82** and an outlet **84**. First and second channels **54**, **81** may be in fluid communication, for example, connected by a passage **86**. Second channel **81** may be operated upon by a fluid transport mechanism **88** configured to send a stream of another fluid **90** along a third path **92**, which may be substantially parallel to first path **68**. Accordingly, particles displaced from stream **58** into passage **86** may join fluid stream **90** and exit channel **81** through outlet **84**.

[**0038**] The same reference indicators are used to refer to the same system components throughout the discussion of **FIGS. 3-10** below. Thus, to make it easier to understand the relationship between different drawings, selected drawings may include reference indicators for system components that are discussed primarily or exclusively in the context of other drawings.

[**0039**] **FIG. 3** shows a schematic view of a system **110** for sorting cells or other particles. System **110**, and other sorter systems described by the present teachings, may provide environmental isolation of biological material, such as isolation of potentially hazardous material from a user of the system.

[**0040**] System **110** may include a sorter assembly **112**. The sorter assembly may be interfaced electrically with system