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26. A method of separating ions according to claim 21, comprising providing a flow of a carrier gas within the segmented analyzer region.

27. A method of separating ions, comprising:

providing an analyzer region having an average ion flow path, the analyzer region defined by a space between facing electrode surfaces of a plurality of electrode segment pairs including n segment pairs;

during a period of time, applying an asymmetric waveform voltage to each electrode segment pair of the plurality of electrode segment pairs and applying a direct current voltage difference between the facing electrode surfaces of each electrode segment pair, to establish an electrical field for selectively transmitting within the analyzer region a subset of the ions having predetermined high field mobility properties;

during a first portion of the period of time, applying to each electrode segment pair a different dc bias voltage relative to a reference voltage, such that in a direction taken along the average ion flow path the applied dc bias voltage one of increases and decreases from one electrode segment pair to an adjacent electrode segment pair between a first electrode segment pair and the nth electrode segment pair; and,

during a second portion of the period of time not overlapping the first portion, applying to each electrode segment pair a dc bias voltage corresponding to a dc bias voltage that was applied to an adjacent electrode segment pair during the first portion of the period of time,

wherein the application of dc bias voltages during the first portion of the period of time and during the second portion of the period of time cooperate to form a dc bias voltage

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wavefront that translates along the length of the analyzer region, and wherein the selectively transmitted ions are at least partially separated in space along the wavefront in dependence upon their low field mobility properties.

28. A method of separating ions according to claim 27, comprising providing a flow of a carrier gas within the analyzer region during the period of time.

29. A method of separating ions according to claim 27, comprising prior to the period of time:

introducing ions into a portion of the analyzer region; and, providing within the portion of the analyzer region an electrical field that is directed along a direction normal to the average ion flow path, for selectively transmitting within the portion of the analyzer region ions having the predetermined high field mobility properties.

30. A method of separating ions according to claim 27, comprising subsequent to the period of time, applying a direct current voltage difference between the facing electrode surfaces of a subset of the plurality of electrode segment pairs, so as to establish an electrical field that is unsuitable for selectively transmitting ions that are located within a portion of the analyzer region that is defined between the facing electrode surfaces of said subset of the plurality of the electrode segment pairs.

31. A method of separating ions according to claim 30, comprising selectively transmitting ions contained within other than the portion of the analyzer region along the average ion flow path and out through an ion outlet of the analyzer region.

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