Abstract: An ion source includes an ion transfer tube having two segments for transporting a sample fluid containing ions between a first chamber and a second chamber maintained at a reduced pressure relative to the first chamber. A first segment may include a plurality of channels and heat conductive walls forming the plurality of channels. The plurality of channels and walls forming the channels promote efficient convective heat transfer to the sample fluid, thereby enabling operation at relatively high sample fluid flow rates, resulting in an increase in the number of ions that may be delivered to a mass analyzer. A second segment forms a single common channel that receives a plurality of sample streams and enables them to combine into a single ion stream that may be introduced as a single gas stream expansion into the second chamber.

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