

What is claimed is:

1. An ion transport assembly, comprising:
an insulating plate;
a plurality of elongated conductive elements, each element having a cross-section configured for forming an electrode surface;
wherein all of the elements are attached to the insulating plate along their length, whereby the electrode surfaces of all of the elements define an ion transport tunnel; and
wherein the conductive elements further comprise a thermal break forming an inlet portion and a transport portion of the transport assembly.
2. The assembly of claim 1, wherein the plurality of elements comprises four elements.
3. The assembly of claim 1 or claim 2, further comprising a plurality of elongated seals provided at the periphery of the transport tunnel to thereby seal the entire length of the transport tunnel.
4. The assembly of claim 3, wherein the plurality of elongated seals comprise a plurality of thin flat strips over the length of the conductive elements.
5. The assembly of claim 3 or claim 4, wherein each of two adjacent electrode surfaces are separated by a gap of length g , and wherein each of the elongated seals is positioned behind a corresponding gap at a distance d of length greater than length g .
6. The assembly of any one of claims 1 to 5, further comprising a gas injection inlet enabling gas injection into the ion transport tunnel.
7. The assembly of any one of the preceding claims, wherein the conductive elements comprise four curved elements forming an ion transport tunnel making a 90 degrees turn.
8. The assembly of any one of the preceding claims, further comprising a heater for heating the inlet portion.
9. The assembly of any one of the preceding claims, wherein the insulating plate comprises electrical contacts to the conductive elements.

10. An ion transport assembly, comprising:
 - an insulating plate;
 - four elongated conductive elements attached to the insulating plate along their length to thereby form an ion transport tunnel,
 - wherein each of the conductive elements is curved such that the transport tunnel forms a 90 degrees turn wherein the conductive elements further comprise a thermal break forming an inlet portion and a transport portion of the transport assembly.
11. The assembly of claim 10, wherein the ion transport tunnel has a square cross-section.
12. The assembly of claim 10 or claim 11, wherein each of the conductive elements comprises a curved element, whereby the conductive elements form a curved transport tunnel making a 90 degrees turn.
13. The assembly of any one of claims 10 to 12, further comprising a heater for heating the inlet section.
14. The assembly of any one of claims 10 to 13, further comprising four elongated seals, each provided between two of the conductive elements, thereby sealing the transport tunnel throughout its length.
15. The assembly of any one of claims 10 to 14, further comprising a gas inlet for injecting gas into the ion transport tunnel.
16. An ion transport assembly for a mass spectrometer, comprising:
 - an insulating plate;
 - four transport poles attached to the plate and forming an ion transport tunnel;
 - four inlet poles thermally insulated from the transport poles and electrically coupled to the transport poles; and
 - a heater coupled to the inlet poles.
17. The assembly of claim 16, further comprising four elongated seals, each seal provided between two of the transport poles so as to seal the transport tunnel over its length.

18. A method for fabricating an ion transport assembly, comprising:
- obtaining an insulating plate;
 - attaching to the insulating plate four transport poles;
 - electrically connecting four inlet poles to the transport poles, while providing a thermal break between the inlet poles and the transport poles; and
 - coupling a heater to the inlet poles.
19. The method of claim 18, further comprising inserting each of four elongated seals between two of the transport poles so as to seal the transport tunnel over its length.

What is claimed is:

1. An ion transport assembly, comprising:
an insulating plate; and
a plurality of elongated conductive elements, each element having a cross-section configured for forming an electrode surface and further comprising a thermal break forming an inlet portion and a transport portion of the transport assembly;
wherein all of the elements including the inlet portion and the transport portion are attached to the insulating plate along their length, whereby the electrode surfaces of all of the elements define an ion transport tunnel.
2. The assembly of claim 1, wherein the plurality of elements comprises four elements.
3. The assembly of claim 1, further comprising a plurality of elongated seals provided at the periphery of the transport tunnel to thereby seal the entire length of the transport tunnel.
4. The assembly of claim 3, wherein the plurality of elongated seals comprise a plurality of thin flat strips over the length of the conductive elements.
5. The assembly of claim 3 wherein each of two adjacent electrode surfaces are separated by a gap of length g , and wherein each of the elongated seals is positioned behind a corresponding gap at a distance d of length greater than length g .
6. The assembly of claim 3, further comprising a gas injection inlet enabling gas injection into the ion transport tunnel.
7. The assembly of claim 1, wherein the conductive elements comprise four curved elements forming an ion transport tunnel making a 90 degree turn.
8. The assembly of claim 1, further comprising heater for heating the inlet portion.

9. The assembly of claim 8, wherein the isolation plate comprises electrical contacts to the conductive elements.

10. An ion transport assembly, comprising:

an insulating plate; and

four elongated conductive elements comprising a thermal break forming an inlet portion and a transport portion of the transport assembly, all of these being attached to the insulating plate along their length to thereby form an ion transport tunnel, wherein each of the conductive elements is curved such that the transport tunnel forms a 90 degrees turn.

11. The assembly of claim 10, wherein the ion transport tunnel has a square cross-section.

12. The assembly of claim 10, wherein each of the conductive elements comprises a curved element, whereby the conductive elements form a curved transport tunnel making a 90 degrees turn.

13. The assembly of claim 10, further comprising a heater for heating the inlet section.

14. The assembly of claim 13, further comprising four elongated seals, each provided between two of the conductive elements, thereby sealing the transport tunnel throughout its length.

15. The assembly of claim 14, further comprising gas inlet for injecting gas into the ion transport tunnel.

16. The assembly of claim 10, further comprising four elongated seals, each provided between two of the conductive elements, thereby sealing the transport tunnel throughout its length.

17. The assembly of claim 16, further comprising gas inlet for injecting gas into the ion transport tunnel.

18. An ion transport assembly for a mass spectrometer, comprising:

an insulating plate;

four transport poles attached to the plate along their length and forming an ion transport tunnel;

four inlet poles thermally insulated from the transport poles and electrically coupled to the transport poles, the inlet poles being attached to the said insulating plate along their length; and

a heater coupled to the inlet poles.

19. The assembly of claim 18, further comprising four elongated seals, each seal provided between two of the transport poles so as to seal the transport tunnel over its length.

20. A method for fabricating an ion transport assembly, comprising:

(a) obtaining an insulating plate;

(b) attaching to the insulating plate four transport poles and four inlet poles, each along their length;

(c) electrically connecting the inlet poles to the transport poles, while providing a thermal break between the inlet poles and the transport poles; and

(d) coupling a heater to the inlet poles.

21. The method of claim 20, further comprising inserting each of four elongated seals between two of the transport poles so as to seal the transport tunnel over its length.