manifold is within 50% of that of the average flow through each of the microchannels in the plurality of parallel interior microchannels sharing a common manifold; or

(c) applying vacuum to a subset of the plurality of parallel interior microchannels sharing a common manifold.

16. Microchannel apparatus, comprising:

an interior microchannel comprising at least one microchannel wall;

wherein the interior microchannel comprises at least two corners having angles of at least 45° and at least one flat area between the corners;

a post-assembly coating;

wherein the post-assembly comprises a corner thickness that is measured along a line bisecting the corner angle;

wherein the post-assembly coating comprises a coating on the flat area having a flat area coating thickness;

wherein the corner thickness is no more than 50% greater than the flat area coating thickness.

17. The microchannel apparatus of claim 16 wherein the interior microchannel comprises at least two corners having angles of at least 70° and at least one flat area between the corners; and

wherein the average thickness ((d1+d2)/2) of the coating at the perimeter of the corner coating is within 10% of either the average coating thickness (averaged over a microchannel wall, or 100 μm microchannel wall segment, terminating at the corner), or the midpoint thickness between the two corners (either measured at the midpoint of a microchannel wall, or at the midpoint of a 100 μm microchannel wall segment, terminating at the corner).

18. Microchannel apparatus, comprising:

a corner crevice in an interior microchannel;

a post-assembly coating that substantially fills the crevice to form a crevice fill;

two substantially perpendicular microchannel walls comprising a first substantially flat microchannel wall having a substantially flat post-assembly coating disposed thereon and a second microchannel wall that is substantially perpendicular to the first microchannel wall;

an interface between the post-assembly coating on the first substantially flat microchannel wall and an open microchannel;

wherein a surface of the crevice fill forms an interface with the open microchannel, and wherein the surface of the crevice fill is at or below the level of interface between the post-assembly coating on the first substantially flat microchannel wall and an open microchannel, relative to the direction of post-assembly coating growth from the first substantially flat microchannel wall.

19. The microchannel apparatus of claim 18 wherein the first microchannel wall and the second microchannel wall are bonded to each other by diffusion bonding or brazing;

20. Microchannel apparatus, comprising

a plurality of discontinuous recessed or protruded capillary features whose protruded or recessed depth is less than 40% of the minimum dimension of the microchannels in which the capillary features are disposed

wherein the capillary features are contained within at least three or more parallel microchannels

wherein the capillary features have at least one dimension less than 1 mm.

21. A method of making the apparatus of claim 20 comprising forming the capillary features by a method comprising laser cutting, roll forming, electrodischarge machining, photochemical machining, or laser ablation.

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