Claims

1. A structure that is used in the treatment of a fluid, comprising:

a body having an axis;

at least one curved fluid flow path that rotates around, and extends along at least a portion of, the axis of the body.

2. The structure of claim 1, wherein the at least one flow path rotates around the axis a plurality of times.

3. The structure of claim 1 or 2, wherein the at least one flow path has a width and a depth, the width being greater than the depth.

4. The structure of any one of claims 1 to 3, wherein the at least one flow path extends continuously along a length of the body.

5. The structure of any one of claims 1 to 4, wherein the body comprises one or more sheets, the at least one flow path being defined by at least one of the one or more sheets.

6. The structure of claim 5, wherein each sheet has a helicoid structure.

7. The structure of claim 5 or 6, wherein the at least one flow path is formed by or comprises a plurality of corrugations in the one or more sheets.

8. The structure of any one of claims 5 to 7, wherein the at least one flow path comprises one or more walls that extend away from a surface of the one or more sheets.

9. The structure of any one of claims 1 to 8, wherein the body has a plurality of mutually isolated flow paths.

10. The structure of claim 9, wherein the flow paths are coaxially arranged.

11. The structure of claim 9 or 10, wherein the flow paths are arranged linearly relative one another.

12. The structure of claim 10, wherein a wall delimits the mutually isolated flow paths.

13. The structure of any one of claims 9 to 12, wherein the flow paths have different orientations.

14. The structure of any one of claims 1 to 13, wherein, when viewed in cross-section perpendicular to the axis, two or more flow paths of the at least one flow path are positioned relative one another so that the two or more flow paths extend across the axis between opposed sides of the body.

15. The structure of any one of claims 1 to 14, wherein, when viewed in cross-section perpendicular to the axis, two or more flow paths of the at least one flow path are positioned relative one another so that the two or more flow paths extend radially outwards from a common point.

16. The structure of claim 15, wherein the common point is positioned along the axis of the body.

17. The structure of any one of claims 1 to 16, wherein the at least one flow path is provided with one or more protrusions that increase a surface area of the flow path.

18. The structure of any one of claims 1 to 17, wherein the at least one flow path is provided with one or more apertures.

19. The structure of any one of claims 1 to 18, wherein the body defines an internal volume, and wherein the at least one flow path is positioned in the internal volume.

20. The structure of any one of claims 1 to 19, comprising a plurality of bodies, wherein the bodies are in the shape of one or more polygons, and wherein the polygons can tessellate with one another.

21. The structure of any one of claims 1 to 20, wherein the flow path rotates around the axis with a constant radius.

22. The structure of any one of claims 1 to 21, wherein a diameter of the structure is 100 mm or less.

~~23. The structure of any one of claims 1 to 22, wherein the axis is located at a centroid of the body.~~

~~24. The structure of any one of claims 1 to 23, wherein the structure is a packing structure for use in a packed bed.~~

~~25. The structure of any one of claims 1 to 24, wherein the structure forms a modular structure unit, and wherein a plurality of modular structure units can be combined with one another to form a structure assembly.~~

~~26. A structure assembly comprising a plurality of the modular structure units of claim 25.~~

~~27. The structure assembly of claim 26, wherein a diameter of the packing assembly is at least two times a diameter of one of the plurality of modular structure units.~~

~~28. A structure assembly of claim 26 or 27, wherein a maximum diameter of the assembly is 500 mm or less.~~

~~29. A system for treating a fluid comprising:~~

~~a hollow body having a fluid inlet and a fluid outlet and a fluid flow path being defined therebetween; and~~

~~the structure of any one of claims 1 to 26 positioned in the fluid flow path.~~

~~30. A packed bed comprising the structure of any one of claims 1 to 25.~~

~~31. A method of treating a fluid, comprising passing the fluid through the structure of any one of claims 1 to 26.~~

~~32. A fluid treated using the method of claim 31.~~

1. A structure that is used in the treatment of a fluid, comprising:

a body having an axis;

a plurality of curved fluid flow paths that rotate around the axis of the body, and extend continuously along at least a portion of the body,

wherein the body comprises a plurality of sheets, each sheet having a helicoidal structure and forming a continuous surface that rotates around the axis of the body and extends along the at least a portion of the body,

wherein the fluid flow paths are defined by the plurality of sheets,

wherein each fluid flow path rotates around the axis with a constant radius, and

wherein the sheets of the plurality of sheets are arranged approximately parallel to one another.

2. The structure of claim 1, wherein each fluid flow path is formed by or comprises a plurality of corrugations in the plurality of sheets.

3. The structure of claim 2, wherein adjacent sheets are arranged relative one another so that corrugations in one sheet face and are aligned with corrugations in an adjacent sheet to form respective fluid flow paths having the appearance of a hexagon without parallel side walls.

4. The structure of claim 1, wherein each fluid flow path comprises one or more walls that extend away from a surface of the plurality of sheets.

5. The structure of claim 1, wherein the body has a plurality of mutually isolated fluid flow paths.

6. The structure of claim 5, wherein the fluid flow paths are coaxially arranged.

7. The structure of claim 5, wherein the fluid flow paths are arranged linearly relative one another.

8. The structure of claim 6, wherein a wall delimits the mutually isolated fluid flow paths.

9. The structure of claim 1, wherein each fluid flow path is provided with one or more protrusions that increase a surface area of the flow path.

10. The structure of claim 1, wherein each fluid flow path is provided with one or more apertures.

11. The structure of claim 1, wherein a diameter of the structure is 100 mm or less.

12. The structure of claim 1, wherein the structure forms a modular structure unit, and wherein a plurality of modular structure units can be combined with one another to form a structure assembly.

13. The structure of claim 12, where a perimeter of the body is defined by a polygon such that adjacent bodies can be tessellated with one another to form the structure assembly.

14. A structure assembly comprising a plurality of the modular structure units of claim 13.

15. The structure assembly of claim 14, wherein a diameter of the structure assembly is at least two times a diameter of one of the plurality of modular structure units.

16. The structure assembly of claim 14, wherein a maximum diameter of the assembly is 500 mm or less.