

1. An assembly capable of being positioned in a wellbore, the assembly comprising:

a hydrophobic material on a first portion of an inner region of a wall;

and

a hydrophilic material on a second portion of the inner region of the wall.

2. The assembly of claim 1, wherein the wall is adapted to be positioned antecedent in a flow path to a switching mechanism for a flow control device.

3. The assembly of claim 2, wherein at least one of the hydrophobic material or the hydrophilic material is adapted to increase surface roughness of part of the inner region of the wall based on at least one property of fluid flowing through the flow path.

4. The assembly of claim 2, wherein at least one of the hydrophobic material or the hydrophilic material is adapted to cause fluid flowing through the flow path to oscillate, resulting in an increase differential pressure for the fluid during flow through the flow path to the switching mechanism.

5. The assembly of claim 4, wherein at least one of the hydrophobic material or the hydrophilic material is adapted to cause fluid flowing through the flow path to oscillate by changing a velocity profile of the fluid flowing through the flow path.

6. The assembly of claim 2, wherein the switching mechanism is adapted to be positioned between a vortex assembly and the first portion and the second portion of the inner region of the wall, the switching mechanism comprising a plurality of passageways that provide separate flow paths to the vortex assembly.

7. The assembly of claim 1, wherein at least one of:

first material on the first portion of the inner region of the wall is configured to change to the hydrophobic material in response to stimuli applied to the first material in the wellbore; or

second material on the second portion of the inner region of the wall is configured to change to the hydrophilic material in response to the stimuli applied to the second material in the wellbore.

8. The assembly of claim 7, wherein the stimuli comprises one of:
light;
electric energy; or
a chemical.
9. The assembly of claim 1, wherein the first portion and the second portion are in a pattern on the inner region of the wall.
10. The assembly of claim 1, wherein the first portion is on an opposite side of the inner region of the wall to the second portion.
11. A flow control device adapted to be positioned in a wellbore, the flow control device comprising:
an inner region of a wall comprising a portion having a hydrophilic material thereon; and
a switching mechanism subsequent to the portion in a flow path of the flow control device.
12. The flow control device of claim 11, wherein the inner region of the wall further comprises a second portion having a hydrophobic material thereon.
13. The flow control device of claim 12, wherein the portion and the second portion are in a pattern on the inner region of the wall.

14. The flow control device of claim 12, wherein the portion is on an opposite side of the inner region of the wall to the second portion.

15. The flow control device of claim 11, wherein the hydrophilic material is adapted to increase surface roughness of part of the inner region of the wall in response to fluid having a higher concentration of water than other types of fluid.

16. The flow control device of claim 15, wherein the part of the inner region of the wall having the increase surface roughness is configured to change a velocity profile of the fluid having the higher concentration of water than other types of fluid,

wherein the switching mechanism is configured to cause the fluid to be selected using the change to the velocity profile of the fluid.

17. The flow control device of claim 11, wherein the hydrophilic material comprises a material that changes to the hydrophilic material in response to stimuli applied to the material in the wellbore, wherein the stimuli comprises one of:

light;

electric energy; or

a chemical.

18. A flow control device adapted to be positioned in a wellbore, the flow control device comprising:

an inner region of a wall comprising a portion having a hydrophobic material thereon; and

a switching mechanism subsequent to the portion in a flow path of the flow control device.

19. The flow control device of claim 18, wherein the inner region of the wall further comprises a second portion having a hydrophilic material thereon.

20. The flow control device of claim 18, wherein the hydrophobic material is adapted to increase surface roughness of part of the inner region of the wall in response to fluid having a higher concentration of hydrocarbons than other types of fluid.

CLAIMS

What is claimed is:

1. An assembly capable of being positioned in a wellbore, the assembly comprising: a hydrophobic material on a first portion of an inner region of a wall; and a hydrophilic material on a second portion of the inner region of the wall, wherein the first portion is on an opposite side of the inner region of the wall to the second portion.
2. The assembly of claim 1, wherein the wall is adapted to be positioned antecedent in a flow path to a switching mechanism for a flow control device.
3. The assembly of claim 2, wherein at least one of the hydrophobic material or the hydrophilic material is adapted to increase surface roughness of part of the inner region of the wall based on at least one property of fluid flowing through the flow path.
4. The assembly of claim 2, wherein at least one of the hydrophobic material or the hydrophilic material is adapted to cause fluid flowing through the flow path to oscillate, resulting in an increase differential pressure for the fluid during flow through the flow path to the switching mechanism.
5. The assembly of claim 4, wherein at least one of the hydrophobic material or the hydrophilic material is adapted to cause fluid flowing through the flow path to oscillate by changing a velocity profile of the fluid flowing through the flow path.
6. The assembly of claim 2, wherein the switching mechanism is adapted to be positioned between a vortex assembly and the first portion and the second portion of the inner region of the wall, the switching mechanism comprising a plurality of passageways that provide separate flow paths to the vortex assembly.
7. The assembly of claim 1, wherein at least one of: first material on the first portion of the inner region of the wall is configured to change to the hydrophobic material in response to stimuli applied to the first material in the wellbore; or second material on the second portion of the inner region of the wall is configured to change to the hydrophilic material in response to the stimuli applied to the second material in the wellbore.

8. The assembly of claim 7, wherein the stimuli comprises one of: light; electric energy; or a chemical.
9. The assembly of claim 1, wherein the first portion and the second portion are in a pattern on the inner region of the wall.
10. A flow control device adapted to be positioned in a wellbore, the flow control device comprising: an inner region of a wall comprising a portion having a hydrophilic material thereon; and a switching mechanism subsequent to the portion in a flow path of the flow control device, wherein the inner region of the wall further comprises a second portion having a hydrophobic material thereon.
11. The flow control device of claim 10, wherein the portion and the second portion are in a pattern on the inner region of the wall.
12. The flow control device of claim 10, wherein the portion is on an opposite side of the inner region of the wall to the second portion.
13. The flow control device of claim 10, wherein the hydrophilic material is adapted to increase surface roughness of part of the inner region of the wall in response to fluid having a higher concentration of water than other types of fluid.
14. The flow control device of claim 13, wherein the part of the inner region of the wall having the increase surface roughness is configured to change a velocity profile of the fluid having the higher concentration of water than other types of fluid, wherein the switching mechanism is configured to cause the fluid to be selected using the change to the velocity profile of the fluid.
15. The flow control device of claim 10, wherein the hydrophilic material comprises a material that changes to the hydrophilic material in response to stimuli applied to the material in the wellbore, wherein the stimuli comprises one of: light; electric energy; or a chemical.
16. A flow control device adapted to be positioned in a wellbore, the flow control device

comprising: an inner region of a wall comprising a portion having a hydrophobic material thereon; and a switching mechanism subsequent to the portion in a flow path of the flow control device, wherein the inner region of the wall further comprises a second portion having a hydrophilic material thereon.

17. The flow control device of claim 16, wherein the hydrophobic material is adapted to increase surface roughness of part of the inner region of the wall in response to fluid having a higher concentration of hydrocarbons than other types of fluid.