Claims

1. A haemostatic device comprising:

a substrate; and

a surface formed on the substrate, the surface comprising at least one of micro– and nano-sized materials, the at least one of micro– and nano-sized materials being partially embedded in a base, the surface substantially preventing wetting of the substrate;

wherein the at least one of micro– and nano-sized materials are hydrophobic;

wherein a weight ratio of the base to at least one of micro– and nano-sized materials is about 4:1 to about 150:1.

~~2. The haemostatic device of claim 1, wherein the materials are hydrophobic.~~

~~3.~~2. The haemostatic device of claim ~~2~~1, wherein the at least one of micro– and nano-sized materials comprise hydrophobic nanofibers immobilized in the base.

~~4.~~3. The haemostatic device of claim ~~3~~2, wherein the nanofibers are carbon nanofibers.

~~5.~~4. The haemostatic device of any one of claims 1 to ~~4~~3, wherein the surface has random surface morphology to obtain a water contact angle of at least 130°.

~~6.~~5. The haemostatic device of any one of claims 1 to ~~5~~4, wherein the surface morphology entrains air pockets between the surface and a liquid coming into contact with the surface.

~~7.~~6. The haemostatic device of any one of claims 1 to ~~6~~5, wherein the surface, once formed, has a random surface morphology of one of micro-roughness and nano-roughness.

~~8.~~7. The haemostatic device of claim ~~3~~ 2 or ~~4~~3, wherein the nanofibers have a diameter of about 5-1000 nm and/or a length of about 5 to 500µm.

~~9.~~ The haemostatic device of any one of claims 1 to ~~8~~7, wherein the base is a hydrophobic~~.~~

~~10.~~

~~11.~~8. ~~The haemostatic device of any one of claims 1 to 9, wherein the base is an~~ organic or polymeric matrix.

~~12.~~9. The haemostatic device of claim ~~9 or 10~~8, wherein the matrix is a biocompatible polymer capable of immobilizing the materials.

~~13.~~10. The haemostatic device of claim 9 ~~or 11~~, wherein the biocompatible polymer is at least one of polytetrafluoroethylene (PTFE), beeswax and polydimethylsiloxane (PDMS).

~~14.~~11. The haemostatic device of any one of claims 1 to ~~12~~10, being one of a wound dressing, catheter-based stent, coil or graft.

12.A haemostatic coating dispersion comprising at least one of micro- and nano-sized materials, and a base in a dispersion, for depositing on a substrate to form a hydrophobic surface comprising the at least one of micro- and nano-sized materials partially embedded in the base, the surface substantially preventing wetting of the substrate;
wherein the at least one of micro- and nano-sized materials are hydrophobic; and
wherein a weight ratio of the base to at least one of micro– and nano-sized materials is about 4:1 to about 150:1.

~~15.The haemostatic coating dispersion of claim 14, wherein the materials, when at least partially embedded, are hydrophobic.~~

~~16.~~13. The haemostatic coating dispersion of claim ~~15~~12, wherein the materials comprise nanofibers immobilized in the hydrophobic base on formation of the surface.

~~17.~~14. The haemostatic coating dispersion~~device~~ of claim ~~16~~13, wherein the nanofibers are carbon nanofibers.

~~18.~~15. The haemostatic coating dispersion of any one of claims ~~14~~ 12 to ~~17~~14, wherein the surface morphology entrains air pockets between the surface and a liquid coming into contact with the surface.

~~19.~~16. The haemostatic coating dispersion of any one of claims 12 to 15, wherein the surface, once formed, has a random surface morphology of one of micro-roughness and nano-roughness.

~~20.~~The haemostatic coating dispersion of claim ~~14~~12, wherein the materials comprise nanofibers having a diameter ranging from about 5nm to 1 micron or micro-sized materials having a diameter from about 1 µm to 200 µm~~.~~

~~21.~~

~~22.~~17. ~~The haemostatic coating dispersion of claim 20~~, and wherein the nanofiber~~smaterials~~ have a length of about 5 to 500µm.

~~23.The haemostatic coating dispersion of any one of claims 14 to 21, wherein the base is.~~

~~24.~~18. The haemostatic coating dispersion of any one of claims ~~14~~ 12 to ~~22~~17, wherein the base ~~hydrophobic base~~ is a~~n~~ hydrophobic organic or polymeric matrix.

~~25.~~19. The haemostatic coating dispersion of claim ~~22 or 23~~18, wherein the matrix is at least one of polytetrafluoroethylene (PTFE) and polydimethylsiloxane (PDMS), or other biocompatible polymers capable of immobilizing the nanofibers.

~~26.~~20. A hydrophobic surface formed by applying the haemostatic coating dispersion of any one of claims ~~14~~ 12 to ~~24~~ 19 to a substrate.