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 at least one of micro– and nano-sized materials comprise hydrophobic nanofibers immobilized in the base.

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

4. The haemostatic device of any one of claims 1 to 3, wherein the surface has random surface morphology to obtain a water contact angle of at least 130^{o}.

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

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

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

8. The haemostatic device of any one of claims 1 to 7, wherein the base is a hydrophobic organic or polymeric matrix.

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

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

11.The haemostatic device of any one of claims 1 to 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.

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

14.The haemostatic coating dispersion of claim 13, wherein the nanofibers are carbon nanofibers.

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

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.

17.The haemostatic coating dispersion of claim 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, and wherein the nanofibers have a length of about 5 to 500μm.

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

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

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