CLAIMS

1. A wound closure device comprising two or more microstructure arrays, each microstructure array comprising at least two microstructures, wherein the at least two or more microstructure arrays are attached to a flexible backing.

2. The wound closure device of Claim 1, wherein the number of microstructure arrays comprised on the device is 2.

3. The wound closure device of Claim 1, wherein the wound closure device is capable of maintaining a wound in a closed state.

4. The wound closure device of Claim 1, wherein the flexible backing is not stretchable.

5. The wound closure device of Claim 1, wherein the microstructure arrays are attached to the flexible backing in a configuration such that at least one of said microstructure arrays is capable of penetrating the skin on one side of a wound, and another one of said microstructure arrays is capable of penetrating the skin on another side of the wound.

6. The wound closure device of Claim 1, wherein the flexible backing comprises an adhesive.

7. The wound closure device of Claim 6, wherein the adhesive is located on one or more removable tabs.

8. The wound closure device of Claim 1, wherein the flexible backing is in the form of a roll bandage.

9. The wound closure device of Claim 1, wherein the two or more microstructure arrays are attached to the flexible backing such that they are separated by an isthmus.

10. The wound closure device of Claim 1, wherein the at least two microstructures are at an angle of from 15-90 degrees relative to the backing.

11. The wound closure device of Claim 1, wherein at least one microstructure is curved.

12. The wound closure device of Claim 1, wherein at least one microstructure is straight.

13. The wound closure device of Claim 1, wherein the length of the at least two microstructures is between 1 μm and 2 mm.

14. The wound closure device of Claim 1, wherein after application to tissue surrounding a wound, the wound closure device is covered with a protective cover.

15. The wound closure device of Claim 1, wherein the at least two microstructures comprise a material selected from a group consisting of silicone, chitin, polymethyl methacrylate (PMMA., metal, and a combination thereof.

16. The wound closure device of Claim 15, wherein the metal is titanium or steel.

17. The wound closure device of Claim 1, wherein the at least two microstructures are selected from the group consisting of microneedles, microblades, microanchors, microfishscale, micropillars, and microhairs.

18. The wound closure device of Claim 1, wherein the at least two microstructures comprise a shape selected from a group consisting of a rod, cone, square, rectangle, pyramid, and cylinder.

19. The wound closure device of Claim 1, wherein the wound closure device is configured to cause less inflammation or scarring in tissue that it is affixed to than is caused by a suture or staples.

CLAIMS

1. A wound closure device comprising two or more microstructure arrays, each microstructure array comprising at least two microstructures, wherein the two or more microstructure arrays are attached to a flexible backing.

2. The wound closure device of Claim 1, wherein the number of microstructure arrays comprised on the device is 2.

3. The wound closure device of Claim 1, wherein the flexible backing is not stretchable.

4. The wound closure device of Claim 1, wherein the microstructure arrays are attached to the flexible backing in a configuration such that at least one of said microstructure arrays is capable of penetrating the skin on one side of a wound, and another one of said microstructure arrays is capable of penetrating the skin on another side of the wound.

5. The wound closure device of Claim 1, wherein the flexible backing comprises an adhesive.

6. The wound closure device of Claim 5, wherein the adhesive is located on one or more removable tabs.

7. The wound closure device of Claim 1, wherein the flexible backing is in the form of a roll bandage.

8. The wound closure device of Claim 1, wherein the two or more microstructure arrays are attached to the flexible backing such that they are separated by an isthmus.

9. The wound closure device of Claim 1, wherein the at least two microstructures are at an angle of from 15-90 degrees relative to the backing.

10. The wound closure device of Claim 1, wherein at least one microstructure is curved.

11. The wound closure device of Claim 1, wherein at least one microstructure is straight.

12. The wound closure device of Claim 1, wherein the length of the at least two microstructures is between 1 μm and 2 mm.

13. The wound closure device of Claim 1, wherein after application to tissue surrounding a wound, the wound closure device is covered with a protective cover.

14. The wound closure device of Claim 1, wherein the at least two microstructures comprise a material selected from a group consisting of silicone, chitin, polymethyl methacrylate (PMMA), metal, and a combination thereof.

15. The wound closure device of Claim 14, wherein the metal is titanium or steel.

16. The wound closure device of Claim 1, wherein the at least two microstructures are selected from the group consisting of microneedles, microblades, microanchors, microfishscale, micropillars, and microhairs.

17. The wound closure device of Claim 1, wherein the at least two microstructures comprise a shape selected from a group consisting of a rod, cone, square, rectangle, pyramid, and cylinder.

18. The wound closure device of Claim 8, wherein the isthmus is from about 2 mm to about 15 mm such that the device cause less inflammation or scarring in tissue that it is affixed to than is caused by a suture or staples.

19. The wound closure device of claim 8, wherein the isthmus does not stretch.

20. The wound closure device of claim 8, wherein the array or array regions are stretchable.