Moisture management as mentioned above is one of the most important parameters as this parameter will dictate the wound healing process. If a wound is kept dry and clean, the recovery process might be faster as there will be a lower possibility of bacterial infection. However, more recently, it has been shown that wounds heal faster and more efficiently when they are kept moist. Hence, there is a demand for wound dressing that has an appropriate degree of hydrophobicity such that the wound may be kept dry and clean for faster healing process.

During the final phase of optimal wound healing process, where the ultimate goal is to allow the tissues to heal effectively without formation of scars, the initial extracellular matrix (ECM) organisation reciprocally interacts with the fibroblasts, such that the ECM is continuously remodelled by fibroblasts and guided by the fibroblast migration. Thus, this initial organisation would significantly affect the resulting matrix since the ECM and fibroblasts interact with each other constantly. Hence, if there is a wound dressing product that can influence fibroblast migration and ECM organisation such that the tissues can heal effectively, thus would be an ideal wound dressing product to satisfy the possible demands from the diverse group of patients.

Accordingly, there is a need to provide a surface textured wound closure material that overcomes, or at least ameliorates, one or more of the disadvantages described above. There is also a need to provide a method of preparing a surface textured wound closure material that ameliorates one or more disadvantages mentioned above.

Summary

There is provided a surface textured wound closure material comprising at least one polymeric layer and an absorbent layer, wherein said polymeric layer is disposed on at least one surface of said absorbent layer and having a plurality of imprints thereon to form a textured surface on said wound closure material.

In one aspect, the present disclosure refers to a surface textured wound closure material comprising at least one polymeric layer and an absorbent layer, wherein said polymeric layer is disposed on at least one surface of said absorbent layer and having a plurality of imprints thereon to form a textured surface on said wound closure material, and wherein said surface textured wound closure material comprises at least one amorphous metal/metal oxide layer deposited thereon.

There is provided a method of preparing a surface textured wound closure device comprising the step of providing at least one surface textured polymeric layer on at least one surface of an absorbent layer to form the surface textured wound closure material.

In another aspect, the present disclosure refers to a method of preparing a surface textured wound closure device comprising the steps of: providing at least one surface textured polymeric layer on at least one surface of an absorbent layer to form the surface textured wound closure material; and depositing at least one amorphous metal/metal oxide layer onto said surface textured wound closure material.

Definitions

The following words and terms used herein shall have the meaning indicated:

The term "wound closure device" or “wound closure material” as used herein includes wound dressing products that utilized gauze dressings or typical bandages such as the adhesive-type of bandages.

The terms “liquidphobic” and “liquidphobicity” when referring to a surface are to be interpreted broadly to include any property of a surface that does not cause a liquid droplet to substantially spread across it. Generally, if the contact angle between a liquid droplet and the surface is greater than 90^{o}, the surface is liquidphobic or exhibits liquidphobicity. Likewise, the terms “hydrophobic” and “hydrophobicity” mean that the surface is liquidphobic or exhibits liquidphobicity when water is the liquid placed thereon. If the

Claims

1. A surface textured wound closure material comprising at least one polymeric layer and an absorbent layer, wherein said polymeric layer is disposed on at least one surface of said absorbent layer and having a plurality of imprints thereon to form a textured surface on said wound closure material, and wherein said surface textured wound closure material comprises at least one amorphous metal/metal oxide layer deposited thereon.

2. The surface textured wound closure material according to claim 1, wherein said surface textured is integrally formed with the polymeric layer.

3. The surface textured wound closure material according to claim 1 or 2, wherein said polymeric layer is disposed on two surfaces of said absorbent layer.

4. The surface textured wound closure material according to any one of the preceding claims, wherein said surface textured comprises hierarchical, pillar, lotus-leaf like, ridges, fibrillar or anisotropic structures.

5. The surface textured wound closure material according to claim 4, wherein the size of the structure is in the range of 500 nm to 10 μm, or 500 nm to 2 μm.

6. The surface textured wound closure material according to claim 4 or 5, wherein the spacing of the structure is in the range of 500 nm to 100 μm, or 500 nm to 2 μm.

7. The surface textured wound closure material according to claim 1, wherein said amorphous oxide layer comprises an oxide of a metal selected from titanium, cobalt, zinc, aluminum and composites thereof.

8. The surface textured wound closure material according to claim 1, wherein said amorphous metal layer comprises of a metal selected from silver, zinc or copper.

9. The surface textured wound closure material according to any one of claims 1 to 7, wherein said amorphous metal oxide layer is deposited by atomic layer deposition.

10. The surface textured wound closure material according to any one of claims 1 to 8, wherein said amorphous metal layer is deposited by electron beam evaporation.

11. The surface textured wound closure material according to any one of claims 1 to 8, wherein said amorphous metal oxide layer comprises amorphous titanium dioxide.

12. A method of preparing a surface textured wound closure material comprising the steps of:
providing at least one surface textured polymeric layer on at least one surface of an absorbent layer to form said surface textured wound closure material, and
depositing at least one amorphous metal/metal oxide layer onto said surface textured wound closure material.

13. The method according to claim 12, further comprising the step of imprinting two surfaces of the absorbent layer with two surface textured polymeric layers via roll-to-roll imprinting.