CLAIMS

1. A medical device comprising a male luer slip fitting connectable to a female luer portion of a second medical device by application of an engagement force to provide a contact surface between the male luer slip fitting and female luer portion and separable by application of a disengagement force that does not require substantial twisting motion, the male luer slip fitting comprising a material incorporating a lubricious agent such that the disengagement force of a dry connection between the male luer slip fitting and female luer portion is less than the engagement force when the contact surface does not include a roughened surface, and the male luer slip fitting has contact surface that is roughened such that the disengagement force required to separate the male luer slip fitting from the female luer portion of the second medical device when the contact surface is wet is greater than the force required to disengage the male luer fitting from the female luer portion of the second medical device under the same conditions when the contact surface of the male luer fitting is not roughened.

2. The medical device of claim 1, wherein the force required to disengage the male luer fitting from the female luer portion increases with increasing engagement force.

3. The medical device of claim 1, wherein the force required to disengage the male luer fitting from the female luer portion is less than about 80% of the engagement force.

4. The medical device of claim 1, wherein the surface of the male luer is roughened using a mold to form the tip that has been roughed using a technique selected from Electrodischarge Machining (EDM), vapor honing, cross hatching, polishing and combinations thereof.

5. The medical device of claim 1, wherein the external surface of the male luer fitting is roughened to between about 0.3 μm to about 1.2 μm.

6. The medical device of claim 1, wherein the external surface of the male luer fitting is roughened with a random pattern finish.

7. The medical device of claim 1, wherein the material includes an additive that enhances the lubricious property of the material.

8. The medical device of claim 7, wherein the additive is glycerol monostearate.

9. The method device of claim 7, wherein the additive is a slip agent.

10. The medical device of claim 9, wherein the slip agent is a fatty acid amide.

11. A method of making a medical device comprising:

manufacturing a male luer fitting with a conical tip having an outside surface that mates with a female luer fitting of a second medical device, male luer fitting manufactured from a material containing a lubricious agent such that the force required to disassemble an non-roughened male conical tip from a female luer fitting is less than the force required to assemble the non-roughened male luer fitting from the female luer fitting; and

roughening the outside surface of the male conical tip such that upon assembly of the male luer fitting with the female luer fitting with liquid present between the male conical tip and female luer fitting, the removal force is less than about the assembly force.

12. The method of claim 11, wherein the outside surface of the male luer fitting is roughened between about 0.3 μm and about 1.2 μm.

13. The method of claim 11, wherein the outside surface of the male luer fitting is roughened with a random pattern finish.

14. The method of claim 11, wherein the surface of the male conical tip is roughened using a mold to form the tip that has been roughed using a technique selected from Electrodischarge Machining (EDM), vapor honing, cross hatching, polishing, sand blasting, bead blasting and combinations thereof

15. The method of claim 11, wherein the medical device is manufactured from a material that includes an additive that enhances the lubricious properties of the material.

16. The method of claim 15, wherein the additive is glycerol monostearate.

17. The method of claim 15, wherein the additive is a slip agent.

18. The method of claim 17, wherein the slip agent is a fatty acid amide.

CLAIMS

1. A medical device (10) comprising a male luer slip fitting (12) connectable to a female luer portion (14) of a second medical device (16) by application of an engagement force to provide a contact surface between the male luer slip fitting (12) and female luer portion (14) and separable by application of a disengagement force that does not require substantial twisting motion, the male luer slip fitting (12) comprising a material incorporating a lubricious agent such that the disengagement force of a dry connection between the male luer slip fitting (12) and female luer portion (14) is less than the engagement force when the contact surface does not include a roughened surface, and the male luer slip fitting (12) has contact surface that is roughened such that the disengagement force required to separate the male luer slip fitting (12) from the female luer portion (14) of the second medical device (16) when the contact surface is wet is greater than the force required to disengage the male luer slip fitting (12) from the female luer portion (14) of the second medical device (16) under the same conditions when the contact surface of the male luer fitting (12) is not roughened, **characterized in that** the material of the male luer slip fitting (12) includes an additive that enhances the lubricious property of the material, and the external surface of the male luer fitting (12) is roughened to between 0.3 μm to 1.2 μm.

2. The medical device (10) of claim 1, wherein the force required to disengage the male luer fitting (12) from the female luer portion (14) increases with increasing engagement force.

3. The medical device (10) of claim 1, wherein the force required to disengage the male luer fitting (12) from the female luer portion (14) is less than 80% of the engagement force.

4. The medical device (10) of claim 1, wherein the surface of the male luer (12) is roughened using a mold to form the tip that has been roughed using a technique selected from Electrodischarge Machining (EDM), vapour honing, cross hatching, polishing and combinations thereof.

5. The medical device (10) of claim 1, wherein the external surface of the male luer fitting (12) is roughened with a random pattern finish.

6. The medical device (10) of claim 1, wherein the additive is glycerol monostearate.

7. The medical device (10) of claim 1, wherein the additive is a slip agent.

8. The medical device (10) of claim 7, wherein the slip agent is a fatty acid amide.

9. A method of making a medical device (10) comprising:
manufacturing a male luer fitting (12) with a conical tip having an outside surface that mates with a female luer fitting (14) of a second medical device (16), male luer fitting manufactured from a material that includes an additive that enhances the lubricious properties of the material, such that the force required to disassemble an non-roughened male conical tip from a female luer fitting (14) is less than the force required to assemble the non-roughened male luer fitting (12) from the female luer fitting (14); and
roughening the outside surface of the male conical tip to a roughness of between 0.3 μm and 1.2 μm such that upon assembly of the male luer fitting (12) with the female luer fitting (14) with liquid present between the male conical tip and female luer fitting (14), the removal force is less than about the assembly force.

10. The method of claim 9, wherein the outside surface of the male luer fitting (12) is roughened with a random pattern finish.

11. The method of claim 9, wherein the surface of the male conical tip is roughened using a mold to form the tip that has been roughed using a technique selected from Electrodischarge Machining (EDM), vapor honing, cross hatching, polishing, sand blasting, bead blasting and combinations thereof.

12. The method of claim 9, wherein the additive is glycerol monostearate.

13. The method of claim 9, wherein the additive is a slip agent.

14. The method of claim 13, wherein the slip agent is a fatty acid amide.