mixture. Typical compounds having strong basicity include, but not limited to, sodium hydroxide, potassium hydroxide, lithium hydroxide, calcium hydroxide, ammonium hydroxide and the like, and mixtures thereof. Treatment methods may include immersing the silk fiber into

an alkali solution, spraying the silk-fiber with the alkali solution, or any such variation known to those skilled in the art, Without being bound to any theory or principle, it is known to one skilled in the art that silk fibers obtained in its natural state comprises a coating of a gummy mixture comprising a protein named sericin and that the alkaline solution can be used to efficiently remove the coating (Altman, G. H.; Diaz, F.; Jakuba, C.; Calabro, T.; Horan, R. L.; Chen, J.; Lu, H.; Richmond, J.; Kaplam, D. L., Silk-based biomaterials. *Biomaterials* 2003, *24* (3), 401-416). An optional washing step may be included to wash off the excess alkali or other extraneous material.

[0029] The hydrophilic polymer that may have been treated to render them suitable for further use is further immobilized with at least one of a first reagent, a second reagent or both, to form the diagnostic-fiber composition. In some instances, the first reagent is an antigen. Antigens useful in the invention include, for example p24, gp120, gp41, HIVII – gp105, gp36, Hepatitis C – NS3, NS5, core antigen, β-Hcg (pregnancy), TSH (thyroid), FSH (female hormone), Troponin-T (cardiac), CpkMb, BNP, Myoglobin, Hb1Ac, PSA, AFP, CEA, CA125, CA19.9, Progestorone, Testosterone, ~~EstradiolIn~~ Estradiolin yet other instances, the first reagent is a primary antibody. Useful primary antibodies include, for example, Anti HBs (IgG), Anti HBc (IgM), Anti-hcG, Anti-HIV-p24, Anti-HIV-gp120, Anti-FSH, Anti-TSH, Anti Troponin, and Anti Plasmodium Falciparum, Toxoplasma IgM, Rubella IgM, Herpex Simplex Virus 2 IgM, Cytomegavirus IgM, Typhidot IgM, Typhidot IgG, Dengue IgM, Dengue IgG, Leptospira $IgM_{\star}$. In situations wherein a second reagent is present, the second reagent may be another primary antibody, or it may be a secondary antibody. In the case of a diagnostic-fiber composition having a primary antibody as the first reagent and a secondary antibody as the second reagent, it must be understood that the secondary antibody must be present upstream to the primary antibody taking into account the flow of fluids along the final diagnostic device. As used herein, the terms "upstream" and "downstream" are used to indicate the relative position with respect to

measured by techniques such as contact angle made by a drop of water on the surface of the material. Hydrophobic-fiber compositions are made from hydrophobic materials. Useful hydrophobic materials include polyamides such as, Nylon-66, Nylon-6, and other Nylons, Kevlar®; polyesters such as poly(ethylene terephthalate), poly(butylene terephthalate); poly(phenylene oxide); hydrophobic-coated silk, and the like, and combinations thereof. In one specific embodiment, the hydrophobic-fiber composition is a hydrophobic-coated silk. Typical hydrophobic coating useful in the invention include gold coating, tin coating, nickel coating, brass coating, copper coating, and the like.

[0036] The diagnostic device of the invention is made by the inter-weaving the at least one strand of the diagnostic-fiber composition and the at least one strand of the hydrophobic-fiber composition, represented by numeral 26 in figure 1. The method of inter-weaving is generally known among textile manufacturers ~~(See for example http://www.britannica.com/EBchecked/topic/638448/weaving)~~. A useful method of inter-weaving includes the use of a double warp double weft technique. Other methods of introducing warp and weft are known in the art. Warp means the lengthwise yarns while weft means the yarn that is threaded through the warp. The angle between the warp and the weft can influence the flow properties within the diagnostic-fiber composition, and hence provides greater control over the use of the diagnostic device of the invention, which step is also included in the method of the invention. Currently, machines exist that are used extensively in the textile manufacturing industry for the production of finished textile goods using the double warp double weft technique along with other techniques.

[0037] A loom is an exemplary device used for weaving, and may be advantageously used for the production of the diagnostic device of the invention. Several types of looms are readily commercially available for use. Exemplary looms useful in the invention include, but not limited to, jacquard loom, dobby loom, treadle loom, power loom, and the like.

[0038] The method of the invention is particularly attractive as it is conducive for scale-up for manufacturing a large number of diagnostic devices within a given period

We Claim:

1. A method of making a diagnostic device, said method comprising:

providing at least one strand of a diagnostic fiber composition;

providing at least one strand of a hydrophobic fiber composition;

inter-weaving the at least one strand of the diagnostic fiber composition and the at least one strand of the hydrophobic fiber composition.

2. The method of claim 1, wherein the diagnostic fiber composition is a hydrophilic polymer immobilized with at least one of a first reagent, a second reagent or both.

3. The method of claim 2, wherein the hydrophilic polymer is selected from the group consisting of degummed silk, poly(vinyl alcohol), cotton, rayon, cellulosic fibers, derivatives thereof, and blends therefrom.

4. The method of claim 3, wherein the hydrophilic polymer is degummed silk.

5. The method of claim 1, wherein the hydrophobic fiber composition is derived from the group consisting of polyamides, polyesters, hydrophobic coated silk, and combinations thereof.

6. The method of claim 5, wherein the hydrophobic fiber composition is hydrophobic coated silk.

7. The method of claim 1, wherein the inter-weaving is achieved using a double warp double weft technique.

8. The method of claim 7, wherein the inter-weaving is achieved using a loom.

9. The method of claim 8, wherein the loom is a jacquard loom.

10. The method of claim 8, wherein the loom is a dobby loom.

11. The method of claim 8, wherein the loom is a treadle loom.

12. The method of claim 8, wherein the loom is a power loom.

13. A diagnostic device made by the method of claim 1-12.

14. A diagnostic device comprising at least one strand of a diagnostic fiber composition and at least one strand of a hydrophobic fiber composition that are inter-woven.

15. The diagnostic device of claim 14, wherein the diagnostic fiber composition is hydrophilic polymer immobilized with at least one of a first reagent, a second reagent or both.

16. The diagnostic device of claim 15, wherein the hydrophilic polymer is selected from the group consisting of degummed silk, poly(vinyl alcohol), cotton, rayon, cellulosic fibers, and combinations thereof.

17. The diagnostic device of claim 16, wherein the hydrophilic polymer is degummed silk.

18. The diagnostic device of claim 14, wherein the hydrophobic fiber composition is selected from the group consisting of polyamides, polyesters, hydrophobic coated silk, and combinations thereof.

19. The method of claim 18, wherein the hydrophobic fiber composition is hydrophobic coated silk.

We Claim:

1. A method of making a diagnostic device, said method comprising:

providing at least one strand of a diagnostic-fiber composition, wherein the diagnostic-fiber composition comprises degummed silk immobilized with at least one of a first reagent, a second reagent or both;

providing at least one strand of a hydrophobic-fiber composition;

inter-weaving the at least one strand of the diagnostic-fiber composition and the at least one strand of the hydrophobic- fiber composition, wherein the inter-weaving between the strands is configured to result in an angle between the strands which provides greater control to affect flow properties of the at least one strand of the diagnostic-fiber composition wherein the strand of the diagnostic-fiber composition and the strand of the hydrophobic-fiber composition are wound relative to one another.

2. The method of claim 1, wherein the hydrophobic-fiber composition is derived from the group consisting of polyamides, polyesters, hydrophobic-coated silk, and combinations thereof.

3. The method of claim 2, wherein the hydrophobic-fiber composition is hydrophobic-coated silk.

4. The method of claim 1, wherein the inter-weaving is achieved using a double warp double weft technique.

5. The method of claim 4, wherein the inter-weaving is achieved using a loom.

6. The method of claim 5, wherein the loom is a jacquard loom.

7. The method of claim 5, wherein the loom is a dobby loom.

8. The method of claim 5, wherein the loom is a treadle loom.

9. The method of claim 5, wherein the loom is a power loom.

10. A diagnostic device made by ~~the~~ a method ~~of claim 1-9~~ comprising~~:~~:

providing at least one strand of a diagnostic-fiber composition, wherein the diagnostic-fiber composition comprises degummed silk immobilized with at least one of a first reagent, a second reagent or both,

providing at least one strand of a hydrophobic-fiber composition, and

inter-weaving the at least one strand of the diagnostic-fiber composition and the at least one strand of the hydrophobic-fiber composition, wherein the inter-weaving between the strands is configured to result in an angle between the strands which provides greater control to affect flow properties of the at least one strand of the diagnostic-fiber composition wherein the strand of the diagnostic fiber composition and the strand of the hydrophobic-fiber composition are wound relative to one another.

11. A diagnostic device comprising:

at least one strand of a diagnostic-fiber composition, wherein the diagnostic-fiber composition comprises degummed silk immobilized with at least one of a first reagent, a second reagent or both; and

at least one strand of a hydrophobic-fiber composition that ~~are~~ is inter-woven with the at least one strand of diagnostic-fiber composition, wherein inter-weaving between the strands is configured to result in an angle between the strands which provides greater control to affect flow properties of the at least one strand of the diagnostic-fiber composition wherein the strand of the diagnostic-fiber composition and the strand of the hydrophobic-fiber composition are wound relative to one another.

12. The diagnostic device of claim 11, wherein the hydrophobic-fiber composition is ~~selected from the group consisting of polyamides, polyesters, hydrophobic-coated silk, and combinations thereof~~ hydrophobic-coated silk.

13. The ~~method~~ diagnostic device of claim ~~12~~ 11, wherein ~~the hydrophobic fiber composition is hydrophobic coated silk.~~ an interweave pattern of warp and weft of the at least one strand of a diagnostic-fiber composition and at least one strand of a hydrophobic-fiber composition is made by using a double warp double weft technique.

14. The diagnostic device of claim 13, wherein the interweave pattern of warp and weft is made by using a loom.