

25. The method of any one of claims 1-24, wherein the stamping surface comprises a poly(dimethylsiloxane), and wherein the functionalizing molecule is an organosulfur compound selected from at least one of alkyl thiols and aryl thiols.

5 26. The method of anyone of claims 1-25, wherein the major surface of the ink-receptive material is selected from the group consisting of metals, polymeric films, glass, ceramic and composites.

10 27. The method of any one of claims 1-26, wherein the ink-receptive material is a web material that is unwound from a support.

15 28. The method of claim 27, wherein the web material is tensioned between a first support roll and a second support roll, and wherein the tension in the web material between the first support roll and the second support roll is between about 0.5 pounds per lineal inch (87.56 N/m) and 10 pounds per lineal inch (1751.27 N/m).

20 29. The method of any one of claims 1-28, wherein the surface of the ink-receptive material comprises SAM-free areas, and the method further comprises etching the SAM-free areas.

30 30. The method of any one of claims 1-29, wherein the stamp is mounted on a rotating element, wherein the rotation of the rotating element is supported by at least one air bearing.

25 31. The method of any one of claims 1-30, further comprising removing the stamping surface from the major surface of the ink-receptive material.

30 32. An elastomeric microcontact printing stamp comprising a base surface and a stamping surface extending away from the base surface, the stamping surface comprising:
at least one first pattern element with a fill factor of 20 to 99 percent, wherein the first pattern element of the stamping surface comprises a continuous region and at

39. The stamp of any one of claims 32-38, wherein the interior voids in the first pattern element in the first stamping surface form a mesh.

5 | 40. The stamp of any one of claims 32-~~29~~39, wherein the fill factor of the first pattern element is 22.5% - 95%.

41. The stamp of any one of claims 32-39, wherein the fill factor of the first pattern element is 25% - 80%.

10 42. The stamp of any one of claims 32-41, wherein the first pattern element has an area of 1mm^2 to 10mm^2 .

15 43. The stamp of any one of claims 32-42, wherein the second pattern element has a fill factor of 0.5% to 5%.

44. The stamp of any one of claims 32-43, wherein the second pattern element has an area of 10cm^2 to 5000cm^2 .

20 45. The stamp of any one of claims 32-44, wherein the second pattern element comprises a mesh.

46. The stamp of claim 45, wherein the mesh comprises a plurality of traces, wherein each trace has a width of 0.5 to 10 micrometers.

25 47. The stamp of any one of claims 32-46, wherein the first pattern element and the second pattern element are contiguous.

30 48. An electrically conductive pattern disposed on a visible light transparent substrate, the pattern comprising:

at least one first pattern element comprising a fill factor of 20 to 99 percent,
wherein the first pattern element comprises a continuous region and at least one

65. A method comprising:

tensioning a web material between two support rollers at a tension up to about 10 pounds per lineal inch (1751.27 N/m);

mounting a poly(dimethylsiloxane) stamp on a surface of a roller supported by an air bearing, wherein the stamp comprises a base surface and a stamping surface extending away from the base surface, the stamping surface comprising an arrangement of pattern elements, the pattern elements comprising:

at least one first pattern element with a fill factor of 20 to 99 percent, wherein the first pattern element comprises a continuous region and at least one discontinuous region, the discontinuous region comprising at least one of: (1) one or more elongated concavities; and (2) one or more interior voids; and

at least one second pattern element contiguous with the first pattern element, wherein the second pattern element has a fill factor of 0.25 to 10 percent, wherein the second pattern element comprises a plurality of elongated traces, and wherein each trace has a width of 0.1 micrometers to 50 micrometers;

inking the stamping surface with an ink composition comprising an organosulfur compound;

contacting the inked stamping surface with a major surface of the web material for a contact time sufficient for a thiol functional group on the organosulfur compound to bind to an ink-receptive surface of the web material to provide a self-assembled monolayer (SAM) of the organosulfur compound thereon according to the arrangement of pattern elements on the stamping surface; and

removing the stamping surface from the major surface of the web material.

66. The method of claim 65, wherein the web material moves at a speed of 10 feet per minute (0.05 m/s) to 100 feet per minute (0.50 m/s).

67. The method of any one of claims 65-66, wherein the web material moves continuously between the support rollers.

68. The method of any one of claims 65-67, wherein the web material is selected from the group consisting of metals, polymeric films, glass, ceramics and composites.

69. A roll of web material having a down web direction and a cross web direction, the web material comprising an electrically conductive pattern disposed thereon, the pattern comprising an arrangement of spaced-apart functional pattern elements, wherein the functional pattern elements forming the pattern have a fill factor of 20 to 100 percent and are arranged in the down-web direction; and at least one non-functional pattern element having fill factor of 20 to 100 percent interposed between each of the spaced apart functional pattern elements.
70. The roll of web material of claim 69, wherein the pattern density, for 0.5 mm sections taken along the arrangement of functional elements and non-functional elements in the downweb direction, does not vary by more than 50 percent from an average pattern density for the pattern.
71. The roll of web material of claim 69, wherein the pattern density, for 0.25 mm sections taken along the arrangement of functional elements and non-functional elements in the downweb direction, does not vary by more than 25 percent from an average pattern density for the pattern.
72. The roll of web material of claim 69, wherein the functional pattern elements comprise the electrically conductive pattern of any one of claims 48-64.