Claims:

1. A polishing pad having a polishing surface that is configured to polish a surface of a substrate, comprising:

a plurality of first polishing elements that each comprise a plurality of first polymer layers, wherein at least one of the plurality of first polymer layers forms the polishing surface; and

one or more second polishing elements that each comprise a plurality of second polymer layers, wherein at least a region of each of the one or more second polishing elements is disposed between at least one of the plurality of first polishing elements and a supporting surface of the polishing pad,

wherein the plurality of first polymer layers comprise a first polymer composition and the plurality of second polymer layers comprise a second polymer composition.

2. The polishing pad of claim 1, wherein the first polymer composition has a storage modulus that is greater than the second polymer compositiona composite polishing pad body comprising:
one or more first features formed .

3. The polishing pad of claim 1, wherein the first polymer composition is formed from a first droplet composition and the second polymer composition is formed from a second droplet composition, and wherein

the second droplet composition material, wherein the first material comprises a greater amount of a resin precursor composition material than the first droplet composition, and
the resin precursor composition material has a glass transition temperature of less than or equal to about 40 °Cfirst .

4. The polishing pad of claim 1, wherein the first polymer composition comprises a polymeric material selected from the group consisting of: polyamides, polycarbonates, polyesters, polyether ketones, polyethers, polyoxymethylenes, polyether sulfones, polyetherimides, polyimides, polyolefins, polysiloxanes, polysulfones, polyphenylenes, polyphenylene sulfides, polyurethanes, polystyrene, polyacrylonitriles, polyacrylates, polymethylmethacrylates, polyurethane acrylates, polyester acrylates, polyether acrylates, epoxy acrylates, polycarbonates, polyesters, melamines, polysulfones, polyvinyl materials, acrylonitrile butadiene styrene (ABS), halogenated polymers, block copolymers and copolymers thereofcomposition formed by depositing.

5. The polishing pad of claim 1, wherein an interface between the first polymer composition of the first polishing elements and the second polymer composition of the second polishing elements comprises a concentration gradient that is a mixture of the first polymer composition and the second polymer composition.

6. The polishing pad of claim 1, wherein the one or more second polishing elements comprise the first polymer composition and the second polymer composition, and wherein the ratio of the amount of the first polymer composition to the second polymer composition in the second polishing element is less than one.

7. The polishing pad of claim 6, wherein the first polishing elements further comprise the second polymer composition, and the ratio of the amount of the first polymer composition to the second polymer composition in the second polishing element is greater than one.

8. The polishing pad of claim 1, further comprising one or more substrate observation windows, wherein the substrate observation windows are formed through at least a portion of one of the one or more second polishing elements, wherein the transmittance of the substrate observation window is greater than 35% to electromagnetic radiation within the wavelengths from 280 nm to 800 nm.

9. The polishing pad of claim 1, wherein each of the plurality of first polishing elements have a lateral dimension, which is parallel to the polishing surface, that is between about 250 micrometers and about 3mm in size.

10. The polishing pad of claim 1, wherein the first polymer composition is formed from a first droplet composition and the second polymer composition is formed from a second droplet composition, and the first droplet composition comprises a greater amount of oligomers and resin precursor composition materials that has a functionality greater than or equal to two than the second droplet composition.

11. The polishing pad of claim 1, wherein the first polymer composition is formed from a first droplet composition and the second polymer composition is formed from a second droplet composition, and the first droplet composition comprises oligomers and resin precursor composition materials that have a functionality greater than or equal to two and the second droplet composition comprises resin precursor composition materials that have a functionality less than or equal to two.

12. A polishing pad having a polishing surface that is configured to polish a surface of a substrate, comprising:

a plurality of first polishing elements that each comprise a plurality of first polymer layers that comprise a first polymer material, wherein at least one of the plurality of first polymer layers forms the polishing surface; and

a base region that is disposed between at least one of the plurality of first polishing elements and a supporting surface of the polishing pad, wherein the base region comprises a plurality of layers that each comprise a plurality of cured droplets of a first resin precursor compositionsecond material and a third material andwithin a plurality of cured dropletslayers that form at least a portion of a second resin precursor composition material.each of the one or more first features; and

13. The polishing pad of claim 12a base material layer formed from a fourth material, wherein the first polymer material has a storage modulus that is greater than the material within the plurality of layers used to form the base regionfourth.

14. The polishing pad of claim 12, wherein first polymer material comprises a polymericsecond material selected from the group consisting of: polyamides, polycarbonates, polyesters, polyether ketones, polyethers, polyoxymethylenes, polyether sulfones, polyetherimides, polyimides, polyolefins, polysiloxanes,

polysulfones, polyphenylenes, polyphenylene sulfides, polyurethanes, polystyrene, polyacrylonitriles, polyacrylates, polymethylmethacrylates, polyurethane acrylates, polyester acrylates, polyether acrylates, epoxy acrylates, polycarbonates, polyesters, melamines, polysulfones, polyvinyl materials, acrylonitrile butadiene styrene (ABS), halogenated polymers, block copolymers and copolymers thereof.

15. The polishing pad of claim 12, wherein the interface between the first polishing elements and the base region comprises a concentration gradient that is a mixture of a plurality of cured droplets of the first resin precursor composition formed by depositing droplets of a fifth material and a sixth material within a plurality of cured droplets of the second resin precursor composition material, and the first polymer material comprises a plurality of cured droplets of the first resin precursor composition materiallayers that form at least .

16. The polishing pad of claim 12, wherein the first polymer material comprises a plurality of cured droplets of the first resin precursor composition material, and the ratio of the plurality of cured droplets of the first resin precursor composition material to the plurality of cured droplets of the second resin precursor composition material in the base region is less than one.

17. The polishing pad of claim 12, further comprising one or more substrate observation windows, wherein the substrate observation windows are formed through a portion of the base region, wherein a transmittance of the substrate observation window is greater than 35% to electromagnetic radiation within the wavelengths from 280 nm to 800 nm.material layer,

18. The polishing pad of claim 12, wherein each of the plurality ofone or more first polishing elements have a lateral dimension, which is parallel to features extend from the polishing base material layer, and a surface, that is between about 250 micrometers and about 3mm in size.
of each of the one or more first features form

19. A polishing pad having a polishing surface that is configured to polish a surface of a substrate, comprising: of the composite polishing pad body.

2. The polishing pad of claim 1, wherein the first material has a first hardness and the fourth material has a second hardness different from the first hardness.

3. a plurality The polishing pad of claim 2, wherein the first hardness is greater than the second hardness.

4. first The polishing pad of claim 1, wherein the one or more first features and the base material layer are arranged to achieve a predetermined Young's modulus or a predetermined storage modulus and loss modulus across the composite polishing pad body.

5. The polishing pad of claim 1, wherein the first material has a higher Young's modulus than the fourth material.

6. The polishing pad of claim 1, wherein the one or more first features comprise a plurality of concentric rings separated by the base material layer.

7. ~~elements that each~~The polishing pad of claim 1, wherein the one or more first features comprise a plurality of ~~first polymer layers that comprise a first polymer material, wherein at least one of the plurality of first polymer layers forms the polishing surface; and~~

~~a base region that is disposed between at least one of the plurality of first polishing elements and a supporting surface of the polishing pad, wherein~~posts surrounded by the base ~~region comprises a plurality of layers that each comprise a plurality of cured droplets of a first resin precursor composition material and a plurality of cured droplets of a second resin precursor composition~~ material~~,~~ layer.

8. The polishing pad of claim 1, wherein the ~~polishing surface of~~ one or more first features and base material layer are formed by printing the each of the plurality of formed layers.

9. ~~first~~The polishing pad of claim 1, further comprising one or more observation windows, wherein the one or more observation windows are formed through and/or abut the one or more first features or the base material layer.

10. ~~elements have a formed shape, and the formed shape~~The polishing pad of claim 1, wherein the first material and the fourth material each comprises a polymer material.

11. ~~toroid,~~The polishing pad of claim 10, wherein the polymer material comprises an acrylate.

12. ~~arc, at least a portion of a spiral, a circle,~~The polishing pad of claim 1, wherein the first material comprises an ~~oval,~~acrylate.

13. A polishing pad, comprising:

a composite polishing pad body comprising:

one or more first features formed from a first material, wherein a surface of the one or more first features form a polishing surface, the first material has a ~~square,~~first hardness, and the first material comprises a ~~rectangle,~~first polymer material and a ~~triangle, or~~ second polymer material; and

a ~~polygon, or~~ base material layer formed from a second material, wherein the second material has a second hardness that is less than the first hardness, and the second material comprises the first polymer material and a third polymer material,

wherein the one or more first features extend from the base material layer, and

wherein a concentration of the first polymer material in the first material is greater than the concentration of the first polymer material in the second material.

14. The polishing pad of claim 13, wherein the one or more first features and the base material layer are formed by depositing a plurality of layers comprising the first material and the second material.

15. The polishing pad of claim 13, wherein the one or more first features and the base material layer are arranged to achieve a predetermined Young's modulus or a predetermined storage modulus and loss modulus across the composite polishing pad body.

16. The polishing pad of claim 13, wherein the one or more first features and base material layer are formed by printing.

17. The polishing pad of claim 13, further comprising one or more observation windows, wherein the one or more observation windows are formed through and/or abut the one or more first features or the base material layer.

18. The polishing pad of claim 13, wherein the first polymer material comprises an acrylate.

19. ~~combination thereof~~The polishing pad of claim 13, wherein the first material is formed by depositing droplets of the first polymer material and the second polymer material.

20. The polishing pad of claim 13, wherein the second material is formed by depositing droplets of the first polymer material and the third polymer material.