CLAIMS:

1. A system for nanoscale precision programmable profiling, the system comprising:

a profiling module, wherein said profiling module has an inkjet for dispensing profiling material;

a subsystem for handling a roll-based superstrate, wherein said superstrate is used to form a contiguous film of said profiling material between said superstrate and a substrate;

a subsystem for curing said profiling material; and

a metrology module.

2. The system as recited in claim 1, wherein said profiling module further comprises:

a subsystem for alignment of said superstrate with said substrate.

3. The system as recited in claim 1, wherein said profiling module further comprises:

a subsystem for mitigation of bubbles when forming a contiguous film of said profiling material between said superstrate and said substrate.

4. The system as recited in claim 1, wherein said superstrate has a portion that is textured or patterned.

5. The system as recited in claim 1, wherein said substrate is fixed on a chuck that translates on a stage between said profiling and metrology modules.

6. The system as recited in claim 1, wherein said substrate is nominally flat.

7. The system as recited in claim 1, wherein said substrate is nominally non-flat.

8. The system as recited in claim 1, wherein said subsystem for curing said profiling material comprises an ultraviolet transparent vacuum chuck.

9. The system as recited in claim 1, wherein said metrology module comprises one or more of the following: a Shack-Hartmann wavefront sensor, an interferometer, an optical profilometer, a reflectometer, and a spectrophotometer.

10. The system as recited in claim 1, wherein said system is used to profile precision optical components or XR waveguide substrates.

11. The system as recited in claim 1, wherein said system is used to correct flatness or total thickness variation (TTV) errors in substrates.

12. The system as recited in claim 1, wherein said system is used to profile ophthalmic or trial lenses with higher order aberrations.

13. The system as recited in claim 1 further comprising:

a module for communication, data transfer and exchange with one of the following: a local computer, a remote computer, a cloud-base datacenter and a cloud-based workstation.

14. The system as recited in claim 1, wherein profiling material dispensing locations are determined using an algorithm run in one of the following locations: a local computer, a remote computer, and a cloud-based computer.

15. A method for nanoscale precision programmable profiling on substrates, the method comprising:

dispensing profiling material on a first portion of a substrate or a first portion of a superstrate;

bringing a second portion of said superstrate in contact with a second portion of said substrate;

sandwiching said profiling material between a third portion of said superstrate and a third portion of said substrate;

curing said profiling material; and

separating said superstrate from said substrate after said curing.

16. The method as recited in claim 15 further comprising:

performing metrology of said substrate.

17. The method as recited in claim 15 further comprising:

conducting relative alignment and sidelay correction between said substrate and said superstrate.

18. The method as recited in claim 15 further comprising:

pressurizing a portion of said superstrate to mitigate bubbles.

19. The method as recited in claim 15 further comprising:

determining profiling material dispensing locations using an algorithm run in one of the following locations: a local computer, a remote computer, and a cloud-based computer.

20. The method as recited in claim 15, wherein said superstrate has a texture with a lateral spatial length scale at least one order of magnitude lower than a final substrate profile.

21. The method as recited in claim 15, wherein said substrate is a nominally flat substrate.

22. The method as recited in claim 15, wherein said method is used to create a trial lens with higher order aberrations.

23. The method as recited in claim 15, wherein said method is used to create precision optical components or XR waveguide substrates.

24. The method as recited in claim 15, wherein said method is used to correct total thickness variation (TTV) in substrates.

25. The method as recited in claim 15, wherein said method is used to create an optical surface having one of the following shapes: flat, curved, spherical, aspherical and freeform.

26. The method as recited in claim 15, wherein said method is used to create an optic used in a laser system.

27. The method as recited in claim 15, wherein said method is used to create a substrate with a metalens surface with a customized aberration profile.

28. The method as recited in claim 15, wherein said method is used to create a corrector plate.

29. The method as recited in claim 15, wherein said substrate is a nominally non-flat substrate.

30. The method as recited in claim 15, wherein said method is used to create a spectacle lens with higher order aberrations.

31. The method as recited in claim 15, wherein said substrate is profiled without an orange peel effect or without diamond turning marks.

32. The method as recited in claim 15, wherein said method is combined with reactive ion etching.