CLAIMS

1. A method, comprising:

inspecting a semiconductor wafer using a main laser beam and a secondary laser beam, wherein the semiconductor wafer is rotated during inspection such that a particle passes through the secondary laser beam before passing through the main laser beam and wherein the secondary laser beam has lower power than the main laser beam;

detecting, using the secondary laser beam, the particle on the semiconductor wafer having a size that satisfies a threshold;

in response to detecting the particle, reducing the power of the main laser beam and the power of the secondary laser beam, wherein the particle passes through the main laser beam with the main laser beam at reduced power; and

after the particle has passed through the main laser beam with the main laser beam at the reduced power, restoring the power of the main laser beam and the power of the secondary laser beam in a first controlled manner including a first series of two or more incremental power increases.

2. The method of claim 1, wherein the first series of two or more incremental power increases consists of three to seven incremental power increases.

3. The method of claim 1, wherein the first series of two or more incremental power increases comprises at least three incremental power increases.

4. The method of claim 1, wherein restoring the power of the main laser beam and the power of the secondary laser beam in the first controlled manner comprises ramping up the power of the main laser beam and the power of the secondary laser beam in a first substantially smooth curve.

5. The method of claim 1, wherein restoring the power of the main laser beam and the power of the secondary laser beam in the first controlled manner comprises ramping up the power of the main laser beam and the power of the secondary laser beam in a substantially linear ramp.

6. The method of claim 1, further comprising splitting a third laser beam into the main laser beam and the secondary laser beam, wherein:

reducing the power of the main laser beam and the power of the secondary laser beam comprises reducing the power of the third laser beam; and

restoring the power of the main laser beam and the power of the secondary laser beam in the first controlled manner comprises restoring the power of the third laser beam in a second controlled manner.

7. The method of claim 6, wherein splitting the third laser beam comprises providing the third laser beam to a diffractive optical element that splits the third laser beam into the main laser beam and the secondary laser beam.

8. The method of claim 6, further comprising generating the third laser beam, wherein generating the third laser beam comprises converting a portion of a fourth laser beam into the third laser beam using a harmonic generator, the third laser beam being a harmonic of the fourth laser beam.

9. The method of claim 8, wherein:

reducing the power of the third laser beam comprises reducing the power of the fourth laser beam; and

restoring the power of the third laser beam in the second controlled manner comprises restoring the power of the fourth laser beam in a third controlled manner.

10. The method of claim 9, wherein restoring the power of the fourth laser beam in the third controlled manner comprises restoring the power of the fourth laser beam in a second series of two or more incremental power increases.

11. The method of claim 10, wherein the second series of two of more incremental power increases consists of three to seven incremental power increases.

12. The method of claim 10, wherein the first series of incremental power increases comprises at least three incremental power increases.

13. The method of claim 9, wherein restoring the power of the fourth laser beam in the third controlled manner comprises ramping up the power of the fourth laser beam in a second substantially smooth curve.

14. The method of claim 9, wherein restoring the power of the fourth laser beam in the third controlled manner comprises ramping up the power of the fourth laser beam in a substantially linear ramp.

15. The method of claim 9, further comprising:

generating, at a detector, a control signal in response to detecting the particle; and upon receiving the control signal at a controller:

reducing the power of the fourth laser beam by increasing radio-frequency (RF) power provided to an acousto-optic modulator (AOM) in the path of the fourth laser beam; and

restoring the power of the fourth laser beam in the third controlled manner by reducing the RF power provided to the AOM.

16. A system, comprising:

optics to provide a main laser beam and a secondary laser beam to a semiconductor wafer, wherein the semiconductor wafer is movable relative to the secondary laser beam and the main laser beam such that a particle on the semiconductor wafer passes through the secondary laser beam before passing through the main laser beam and wherein the secondary laser beam has lower power than the main laser beam; and

a detector to detect, using the secondary laser beam, the particle on the semiconductor wafer having a size that satisfies a threshold,

wherein the optics comprise a modulator to cause, in response to detecting the particle:

the power of the main laser beam and the power of the secondary laser beam to be reduced when the particle passes through the main laser beam; and

after the particle has passed through the main laser beam, the power of the main laser beam and the power of the secondary laser beam to be restored in a first controlled manner including a first series of two or more incremental power increases.

17. The system of claim 16, wherein the first series of two or more incremental power increases consists of three to seven incremental power increases.

18. The system of claim 16, wherein the first series of two or more incremental power increases comprises at least three incremental power increases.

19. The system of claim 16, wherein the modulator is configured to restore the power of the main laser beam and the power of the secondary laser beam by ramping up the power of the main laser beam and the power of the secondary laser beam in a first substantially smooth curve.

20. The system of claim 16, wherein the modulator is configured to restore the power of the main laser beam and the power of the secondary laser beam in a substantially linear ramp.

21. The system of claim 16,

wherein the detector generates a control signal in response to detecting the particle;

wherein the system further comprises a controller to receive the control signal; and

wherein in response to receiving the control signal:

the controller is configured to cause the power of the main laser beam and the power of the secondary laser beam to be reduced when the particle passes through the main laser beam; and

the controller is configured to cause the power of the main laser beam and the power of the secondary laser beam to be restored in the first controlled manner after the particle has passed through the main laser beam.

22. The system of claim 21, further comprising a beam splitter to split a third laser beam into the main laser beam and the secondary laser beam, wherein:

in response to receiving the control signal, the controller is configured to cause the power of the third laser beam to be reduced when the particle passes through the main laser beam; and

after the particle has passed through the main laser beam, the controller is configured to cause the power of the third laser beam to be restored in a second controlled manner including a second series of two or more incremental power increases.

23. The system of claim 22, wherein the beam splitter comprises a diffractive optical element.

24. The system of claim 22, further comprising a harmonic generator to convert a portion of a fourth laser beam into the third laser beam, the third laser beam being a harmonic of the fourth laser beam, wherein:

in response to receiving the control signal, the controller is configured to cause the power of the fourth laser beam to be reduced when the particle passes through the main laser beam; and

after the particle has passed through the main laser beam, the controller is configured to cause the power of the fourth laser beam to be restored in a third controlled manner including a third series of two or more incremental power increases.

25. The system of claim 24, wherein:

the modulator is an acousto-optic modulator (AOM);

the system further comprises a radio-frequency (RF) driver, coupled between the controller and the AOM, to provide RF power to the AOM;

in response to receiving the control signal, the controller is configured to cause the power of the fourth laser beam to be reduced when the particle passes through the main laser beam by causing the RF driver to increase the RF power provided to the AOM when the particle passes through the main laser beam; and

after the particle has passed through the main laser beam, the controller is configured to cause the power of the fourth laser beam to be restored in the third controlled manner including the third series of two or more incremental power increases by causing the RF driver to reduce the RF power provided to the AOM.

26. The system of claim 25, wherein the third series of incremental power increases consists of three to seven incremental power increases.

27. The system of claim 25, wherein the third series of incremental power increases comprises at least three incremental power increases

28. The system of claim 25, wherein the controller is configured to cause the power of the fourth laser beam to be restored in a second substantially smooth curve.

29. The system of claim 25, wherein the controller is configured to cause the power of the fourth laser beam to be restored in a substantially linear ramp.