WHAT IS CLAIMED IS:

1. A laser-processing apparatus, comprising:

a laser source operative to generate a beam of laser energy, wherein the beam of laser energy is propagatable along a beam path;

a first positioner arranged within the beam path, wherein the first positioner is operative to deflect the beam path; and

a controller coupled to the first positioner,

wherein the controller is configured to control an operation of the first positioner to deflect the beam path within a first primary angular range and within a second primary angular range, wherein the second primary angular range does not overlap the first angular range and is not contiguous with the first primary angular range, and

wherein the controller is further configured to control an operation of the first positioner to deflect the beam path to a first plurality of angles within the first primary angular range and to a second plurality of angles within second primary angular range.

2. The apparatus of claim 1, wherein the laser source is operative to generate a beam of laser energy having a wavelength in the ultraviolet (UV) range of the electromagnetic spectrum.

3. The apparatus of claim 1, wherein the laser source is operative to generate a beam of laser energy having a wavelength in the long wavelength infrared (LWIR) range of the electromagnetic spectrum.

4. The apparatus of claim 1, wherein the first positioner comprises:

a first acousto-optical deflector (AOD); and

a second AOD optically coupled to an output of the first AOD.

5. The apparatus of claim 1, further comprising:

a first scan head comprising a scan lens;

a second scan head comprising a scan lens;

at least one optical component arranged to guide the beam path deflected within the first angular range to the first scan head; and

at least one optical component arranged to guide the beam path deflected within the second angular range to the second scan head.

6. The apparatus of claim 5, wherein at least one selected from the group consisting of the first scan head and the second scan head includes a second positioner operative to deflect the beam path.

7. The apparatus of claim 6, wherein the second positioner includes a galvanometer mirror system.

8. The apparatus of claim 1, wherein the first AOD and the second AOD are operative to deflect the beam path along the same axis.

9. The apparatus of claim 1, wherein the first primary angular range defines a first scan field and the second angular range defines a second scan field, wherein at least one selected from the group of the first scan field and the second scan field is square in shape.

10. The apparatus of claim 1, wherein the first primary angular range defines a first scan field and the second angular range defines a second scan field, wherein at least one selected from the group of the first scan field and the second scan field is rectangular in shape.

11. A laser-processing apparatus, comprising:

a laser source operative to generate a beam of laser energy, wherein the beam of laser energy is propagatable along a beam path;

a first deflector operative to deflect the beam path;

a second deflector optically coupled to an output of the first deflector and operative to deflect the beam path;

a controller coupled to the first deflector and the second deflector,

wherein the controller is configured to control an operation of the first deflector and the second deflector to deflect the beam path within a plurality of scan fields, wherein at least two of the plurality of scan fields do not overlap one another and wherein at least two of the plurality of scan fields are not contiguous with one another.

12. The apparatus of claim 11, wherein at least one selected from the group consisting of the first deflector and the second deflector comprises an acousto-optical deflector (AOD).

13. The apparatus of claim 11, wherein the controller is further configured to control operations of the first deflector and the second deflector to deflect the beam path to a first plurality of locations within the first scan field and to a second plurality of locations within second scan field.

14. The apparatus of claim 11, wherein at least one selected from the group of the first scan field and the second scan field is rectangular in shape.

15. The apparatus of claim 11, wherein at least one selected from the group of the first scan field and the second scan field is rectangular in shape.

16. The apparatus of claim 11, further comprising:

a first scan head comprising a scan lens;

a second scan head comprising a scan lens;

at least one optical component arranged to guide the beam path deflected within the first angular range to the first scan head; and

at least one optical component arranged to guide the beam path deflected within the second angular range to the second scan head.

17. The apparatus of claim 16, wherein at least one selected from the group consisting of the first scan head and the second scan head includes a positioner operative to deflect the beam path.

18. The apparatus of claim 17, wherein the positioner includes a galvanometer mirror system.

19. A controller for use with an apparatus comprising a first deflector operative to deflect a beam path along which a beam of laser energy is propagatable and a second deflector optically coupled to an output of the first deflector and operative to deflect the beam path, the controller comprising:

a processor; and

memory accessible by the processor, wherein the memory has stored thereon instructions which, when executed by the processor, cause the controller to control an operation of the first deflector and the second deflector to deflect the beam path within a plurality of scan fields,

wherein at least two of the plurality of scan fields do not overlap one another and wherein at least two of the plurality of scan fields are not contiguous with one another.

20. The controller of claim 19, wherein the controller is further configured to control operations of the first deflector and the second deflector to deflect the beam path to a first plurality of locations within the first scan field and to a second plurality of locations within second scan field.

21. The controller of claim 19, wherein at least one selected from the group of the first scan field and the second scan field is rectangular in shape.

22. The controller of claim 19, wherein at least one selected from the group of the first scan field and the second scan field is rectangular in shape.

23. A non-transitory computer-readable medium for use with an apparatus comprising a first deflector operative to deflect a beam path along which a beam of laser energy is propagatable, a second deflector optically coupled to an output of the first deflector and operative to deflect the beam path, and a controller configured to control an operation of the first deflector and the second deflector, the non-transitory computer-readable medium having stored thereon instructions which, when executed by the controller, cause the controller to:

control an operation of the first deflector and the second deflector to deflect the beam path within a plurality of scan fields,

wherein at least two of the plurality of scan fields do not overlap one another and wherein at least two of the plurality of scan fields are not contiguous with one another.

24. The non-transitory computer-readable medium of claim 23, wherein the non-transitory computer-readable medium has stored thereon instructions which, when executed by the controller, cause the controller to control operations of the first deflector and the second deflector to deflect the beam path to a first plurality of locations within the first scan field and to a second plurality of locations within second scan field.

25. The non-transitory computer-readable medium of claim 23, wherein at least one selected from the group of the first scan field and the second scan field is rectangular in shape.

26. The non-transitory computer-readable medium of claim 23, wherein at least one selected from the group of the first scan field and the second scan field is rectangular in shape.