WHAT IS CLAIMED IS:

1. 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 arranged within the beam path and operative to deflect the beam path along a first axis;

a second deflector optically coupled to an output of the first deflector and operative to deflect the beam path, as deflected by the first deflector, along a second axis;

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, the plurality of scan fields including a first scan field and a second scan field, wherein the first scan field and the second scan field do not overlap each other and are not contiguous with each other;

a first scan head and a second scan head each comprising a scan lens;

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

at least one optical component arranged to guide the beam path deflected within the second scan field to the second scan head;

wherein the controller is further configured to control operations of the first deflector and the second deflector to deflect the beam path to a plurality of locations within each of the plurality of scan fields.

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, 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.

6. The apparatus of claim 1, wherein the second positioner includes a galvanometer mirror system.

7. The apparatus of claim 4, wherein the first AOD and the second AOD are operative to deflect the beam path along the same axis.

8. 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.

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 rectangular in shape.

10. The apparatus of claim 1, wherein at least one selected from the group consisting of the first deflector and the second deflector comprises an acousto-optical deflector (AOD).

11. The apparatus of claim 1, wherein at least one selected from the group of the first scan field and the second scan field is rectangular in shape.

12. The apparatus of claim 1, wherein at least one selected from the group of the first scan field and the second scan field is square in shape.

13. A controller for use with an apparatus of claim 1, 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 the first scan field and the second scan field.

14. The controller of claim 13, 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.

15. The controller of claim 13, wherein at least one selected from the group of the first scan field and the second scan field is rectangular in shape.

16. The controller of claim 13, wherein at least one selected from the group of the first scan field and the second scan field is rectangular in shape.

17. A non-transitory computer-readable medium for use with the apparatus of claim 1, 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 the first scan field and the second scan field.

18. The non-transitory computer-readable medium of claim 17, 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.

19. The non-transitory computer-readable medium of claim 17, wherein at least one selected from the group of the first scan field and the second scan field is rectangular in shape.

20. The non-transitory computer-readable medium of claim 17, wherein at least one selected from the group of the first scan field and the second scan field is square in shape.