CLAIMS

1. A charged particle assessment tool comprising:

an objective lens array configured to project a plurality of charged particle beams onto a sample, the objective lens array defining a plurality of beam apertures through which respective one of the charged particle beams can propagate toward the sample; and

a plurality of sensor units, each sensor unit substantially surrounding a respective one of the beam apertures, configured to capture charged particles emitted from the sample.

2. The tool according to claim 1, wherein each of the sensor unit has a circular outer perimeter, and has an area extending between the respective aperture of the sensor unit and the perimeter of the sensor unit.

3. The tool according to claim 1 further comprising a substrate provided at a downbeam-facing surface of the objective lens array and on which the sensor units are formed.

4. The tool according to claim 3, wherein the sensor units are configured to substantially fill a sample-facing surface.

5. The tool according to claim 4, wherein the sensor units are capture electrodes.

6. The tool according to claim 1 further comprising a substrate provided at an upbeam-facing surface of the objective lens array and on which the sensor units are formed.

7. The tool according to claim 1 wherein the plurality of sensor units are integrated into the objective lens array.

8. The tool according to claim 2, further comprising control circuitry formed in the substrate.

9. The tool according to claim 7, wherein the control circuitry comprises one or more selected from:

- an amplifier;
- an analog-to-digital converter;
- a data multiplexor;
- read-out gates.

10. The tool according to claim 2, further comprising vias passing through the substrate.

11. The tool according to claim 2, wherein each sensor unit comprises a plurality of sensor elements.

12. The tool according to claim 11, wherein the plurality of sensor elements divide each sensor unit radially.

13. The tool according to claim 11 or 12, wherein the plurality of sensor elements divide each sensor unit angularly.

14. The tool according to any of claims 10 to 13, wherein the sensor elements of a sensor unit together have an area extending between the aperture and a perimeter of the plurality of sensor units.

15. The tool according to any of the preceding claims wherein the beam apertures is arranged in a hexagonal array.

16. An inspection method comprising:

emitting a plurality of charged-particle beams through a plurality of beam apertures of an objective lens array to a sample; and

capturing charged particles emitted by the sample, in response to the charged-particle beams, using a plurality of sensor units, each sensor unit surrounding a respective one of the beam apertures and, each sensor unit having a circular perimeter and an area

extending between the respective aperture of the sensor unit and the perimeter of the sensor unit.

17. The inspection method of claim 16, further comprising generating detection signals by the sensor units, and further comprising processing the detection signals by circuitry within a substrate that comprises the sensor units.

18. A charged particle assessment tool comprising:

an objective lens array configured to project a plurality of charged particle beams onto a sample, the objective lens array defining a plurality of beam apertures through which respective one of the charged particle beams can propagate toward the sample; and

a plurality of sensor units, each sensor unit substantially surrounding a respective one of the beam apertures and configured to capture charged particles emitted from the sample , wherein the objective lens array is an electrostatic array objective lens.

19. The charged particle assessment tool of claim 18, wherein the objective lens array has at least two plates each with a plurality of holes or apertures.

20. The charged particle assessment tool of claim 19, wherein each sensor unit has a circular outer perimeter and has an area extending between the respective aperture of the sensor unit and the perimeter of the sensor unit.