

**What is claimed is:**

1. A method of controlling a width of an ion energy distribution function (IEDF), comprising:
  - introducing a voltage to an electrode of a processing chamber by activating a main pulser, the main pulser coupled to an IEDF width control module;
  - measuring a current of the IEDF width control module and a voltage or a voltage derivative of the IEDF width control module;
  - calculating an ion current of the processing chamber and a capacitance of the processing chamber based on the current and the voltage or voltage derivative of the IEDF width control module;
  - determining a setpoint for a DC voltage of the main pulser, a setpoint for a voltage or a voltage derivative of the IEDF width control module, or both; and
  - adjusting the DC voltage of the main pulser, the voltage or voltage derivative of the IEDF width control module, or both, to the determined setpoints to control the width of the IEDF.
2. The method of claim 1, wherein the electrode is a substrate electrode.
3. The method of claim 1, wherein the electrode is an edge ring electrode.
4. The method of claim 1, wherein measuring a current of the IEDF width control module and a voltage derivative of the IEDF width control module comprises:
  - setting a DC voltage of the IEDF width control module to two different values;
  - and
  - setting a voltage or a voltage derivative of the IEDF width control module to two different values.
5. A substrate support, comprising:
  - a substrate electrode for applying a substrate voltage to a substrate;
  - an edge ring electrode for applying an edge ring voltage to an edge ring;
  - a substrate voltage control circuit coupled to the substrate electrode; and
  - an edge ring voltage control circuit coupled to the edge ring electrode,wherein:

the substrate electrode is coupled to a power module configured to actively control an energy distribution function width of ions reaching the substrate;

the edge ring electrode is coupled to a power module configured to actively control an energy distribution function width of ions reaching the edge ring; or

a combination thereof,

wherein the substrate voltage control circuit, the edge ring voltage control circuit, or both comprises a main pulser coupled to a current return path, the current return path coupled to the power module and to a processing chamber, wherein the power module comprises a voltage source, a current source, or a combination thereof.

6. The substrate support of claim 5, wherein only the substrate electrode is coupled to the power module.

7. The substrate support of claim 5, wherein only the edge ring electrode is coupled to the power module.

8. The substrate support of claim 5, wherein the power module comprises a transistor-transistor logic signal coupled in parallel with a switch, an optional diode, and a shaped DC pulse voltage source.

9. The substrate support of claim 8, wherein the shaped DC pulse voltage source controls a slope of voltage waveform of the substrate voltage, a slope of voltage waveform of the edge ring voltage, or a combination thereof.

10. The substrate support of claim 5, wherein the power module comprises a transistor-transistor logic signal coupled in parallel with a switch, a diode, and a DC voltage source, the DC voltage source coupled in series to a resistor.

11. The substrate support of claim 10, wherein the DC voltage source coupled in series to the resistor controls a slope of voltage waveform of the substrate voltage, a slope of voltage waveform of the edge ring voltage, or a combination thereof.

12. A substrate support, comprising:  
a substrate electrode for applying a substrate voltage to a substrate;  
an edge ring electrode for applying an edge ring voltage to an edge ring;  
a substrate voltage control circuit coupled to the substrate electrode; and  
an edge ring voltage control circuit coupled to the edge ring electrode,  
wherein:  
the substrate electrode is coupled to a power module configured to actively control an energy distribution function width of ions reaching the substrate;  
the edge ring electrode is coupled to a power module configured to actively control an energy distribution function width of ions reaching the edge ring; or  
a combination thereof,  
wherein the substrate voltage control circuit, the edge ring voltage control circuit, or both comprises:  
a main pulser coupled to the power module, the power module coupled to a processing chamber, the power module comprising a voltage source, a current source, or a combination thereof; or  
a main pulser coupled to the power module, the power module coupled to a processing chamber, wherein the power module is in parallel with a substrate chucking and bias compensation module, and wherein the power module comprises a voltage source, a current source, or a combination thereof.
13. The substrate support of claim 12, wherein a blocking capacitance is coupled to both the main pulser and the power module.
14. The substrate support of claim 12, wherein only the substrate electrode is coupled to the power module.
15. The substrate support of claim 12, wherein only the edge ring electrode is coupled to the power module.

16. The substrate support of claim 12, wherein the power module comprises a transistor-transistor logic signal coupled in parallel with a switch, the switch coupled in parallel to a diode and a DC voltage source, the DC voltage source coupled in series to a resistor.

17. The substrate support of claim 16, wherein the DC voltage source coupled in series to the resistor controls a slope of voltage waveform of the substrate voltage, a slope of voltage waveform of the edge ring voltage, or a combination thereof.

18. The substrate support of claim 12, wherein the power module comprises a transistor-transistor logic signal coupled in parallel with a switch, the switch coupled in parallel to a diode and a shaped DC pulse voltage source.

19. The substrate support of claim 18, wherein the shaped DC pulse voltage source controls a slope of voltage waveform of the substrate voltage.

20. The substrate support of claim 18, wherein the shaped DC pulse voltage source controls a slope of voltage waveform of the edge ring voltage.