

What is claimed is:

1. An apparatus comprising: a collimator comprising a plurality of apertures extending therethrough, the collimator being bipolar, wherein the collimator has a center region formed between a first peripheral region and a second peripheral region, wherein the first and the second peripheral regions each include an outermost edge periphery of the collimator, wherein the collimator includes a honeycomb structure formed throughout the entire collimator, the honeycomb structure defining the apertures formed in the collimator, wherein the apertures have decreasing heights from the center region to the second peripheral region and portions of aspect ratios of the first peripheral region are the same as portions of aspect ratios of the center region, and the apertures of the first peripheral region have the same height as the apertures of the center region, wherein the first and second peripheral regions and the center region share a top surface parallel to a first bottom surface of the first peripheral region and the center region, with a second bottom surface of the second peripheral region being in a plane that intersects the top surface and the first bottom surface.

2. The apparatus of claim 1 further comprising:

a DC power source coupled to the collimator.

3. The apparatus of claim 1 further comprising:

a polar power supply coupled to the collimator.

4. The apparatus of claim 2, wherein the power source is a bipolar pulsed DC power source.

5. The apparatus of claim 1, wherein the collimator is configured in bipolar mode.

6. The apparatus of claim 1, further comprising:

a chamber body and a chamber lid disposed on the chamber body defining a processing region therein;

a target disposed under the chamber lid.

7. The apparatus of claim 6, wherein the target is fabricated from at least one of Al, Ti, Ta, W, Cr, Ni, Cu, Co, or alloys of Al, Ti, Ta, W, Cr, Ni, Cu, or Co.

8. The apparatus of claim 6, wherein the target is fabricated from copper.

9. The apparatus of claim 6, further comprising:

a first magnet disposed around the chamber body above the collimator.

10. The apparatus of claim 9, further comprising:
a second magnet disposed around the chamber body
below the collimator.

11. The apparatus of claim 10, further comprising:
a magnetron assembly disposed above the chamber lid.

12. The apparatus of claim 6, further comprising:
a RF bias power coupled to a substrate support disposed
in the processing chamber.

13. An apparatus comprising:

a chamber body and a chamber lid disposed on the
chamber body defining a processing region therein;

a target disposed under the chamber lid;

a collimator disposed in the processing region under the
lid, the collimator being bipolar, wherein the collimator
comprises a plurality of apertures extending there-
through, wherein the collimator has a center region
formed between a first peripheral region and a second
peripheral region, wherein the first and the second
peripheral regions each include an outermost edge
periphery of the collimator, wherein the first and the
second peripheral region have different heights of the
apertures formed therein, wherein the collimator
includes a honeycomb structure formed throughout the
entire collimator, the honeycomb structure defining the
apertures formed in the collimator, the apertures having
decreasing heights from the center region to the second
peripheral region, wherein portions of aspect ratios of
the first peripheral region are the same as portions of
aspect ratios of the center region, and the apertures of
the first peripheral region have the same height as the
apertures of the center region, wherein the first and
second peripheral regions and the center region share a
top surface parallel to a first bottom surface of the first
peripheral region and the center region, with a second
bottom surface of the second peripheral region being in
a plane that intersects the top surface and the first
bottom surface; and

a DC power source coupled to the collimator.

14. The apparatus of claim 13, wherein the DC power source is a bipolar pulsed DC power source.

15. The apparatus of claim 13, wherein the target is fabricated from at least one of Al, Ti, Ta, W, Cr, Ni, Cu, Co, or alloys of Al, Ti, Ta, W, Cr, Ni, Cu, or Co.

16. The apparatus of claim 13, wherein the target is fabricated from copper.

17. A process kit, comprising:

a collimator, the collimator being bipolar, wherein the collimator comprises a plurality of apertures extending therethrough, wherein the collimator has a center region formed between a first peripheral region and a second peripheral region, wherein the first and the second peripheral regions each include an outermost edge periphery of the collimator, wherein the first peripheral region and the second peripheral region have different heights of the apertures formed therein, wherein the collimator includes a honeycomb structure formed throughout the entire collimator, the honeycomb structure defining the apertures formed in the collimator, the apertures having decreasing heights from the center region to the second peripheral region, and portions of aspect ratios of the first peripheral region are the same as portions of aspect ratios of the center region, and the apertures of the first peripheral region have the same height as the apertures of the center region, wherein the first and second peripheral regions and the center region share a top surface parallel to a first bottom surface of the first peripheral region and the center region, with a second bottom surface of the second peripheral region being in a plane that intersects the top surface and the first bottom surface.