CLAIMS

What is claimed is:

1. A method for processing a substrate in a plasma processing chamber, said substrate being disposed above a chuck and surrounded by a first edge ring, said first edge ring being electrically isolated from said chuck, the method comprising:

providing a second edge ring, said second edge ring being disposed below an edge of said substrate;

providing a coupling ring, wherein said coupling ring is configured to facilitate RF coupling from an ESC (electrostatic chuck) assembly to said first edge ring, thereby causing said first edge ring to have an edge ring potential during substrate processing and causing said RF coupling to be maximized at said first edge ring and minimized at said second edge ring during said substrate processing, said ESC assembly including said chuck; and

RF decoupling said second edge ring from said ESC assembly and first edge ring.

2. The method of claim 1 further comprising:

providing an insulator ring below said first edge ring to encapsulate said second edge ring; and

insulating said second edge ring from said first edge ring using said insulator ring.

3. The method of claim 1 further comprising using second edge ring to cause an explosion at said edge of said substrate.

4. The method of claim 1, wherein said coupling ring is formed of a material that includes at least one of conductive material, aluminum and graphite.

5. The method of claim 1, wherein said ~~wherein said~~ second edge ring is formed of a material that includes at least one of silicon, silicon nitride and silicon dioxide.

6. The method of claim 2, wherein said insulator ring is formed of a material that includes at least one of insulator material and quartz.

7. The method of claim 1 further comprising:

encapsulating said second edge ring inside an insulator ring;

disposing said insulator ring below said first edge ring; and

RF decoupling said second edge ring from said ESC assembly using said insulator ring, said ESC assembly further including an electrode.

8. A plasma processing system having a plasma processing chamber configured for processing a substrate, said substrate being disposed above a chuck and surrounded by a first edge ring, said first edge ring being electrically isolated from said chuck, the plasma processing system comprising:

a second edge ring, said second edge ring being disposed below an edge of said substrate, said second edge ring being RF decoupled from said chuck and first edge ring; and

a coupling ring, wherein said coupling ring is configured to facilitate RF coupling from an ESC (electrostatic chuck) assembly to said first edge ring, thereby causing said first edge ring to have an edge ring potential during substrate processing and causing said RF coupling to be maximized at said first edge ring and minimized at said second edge ring during said substrate processing, said ESC assembly including said chuck.

9. The plasma processing system of claim 8 further comprising an insulator ring encapsulating said second edge ring, said insulator ring RF decoupling said second edge ring from said ESC assembly.

10. The plasma processing system of claim 8, wherein said first edge ring is formed of a material that includes at least one of silicon, silicon nitride and silicon dioxide.

11. The plasma processing system of claim 8, wherein said coupling ring is formed of a material that includes at least one of conductive material, aluminum and graphite.

12. The plasma processing system of claim 8, wherein said ~~wherein said~~ second edge ring is formed of a material that includes at least one of silicon, silicon nitride and silicon dioxide.