

EXTREME EDGE SHEATH AND WAFER PROFILE TUNING THROUGH EDGE-LOCALIZED ION TRAJECTORY CONTROL AND PLASMA OPERATION

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ABSTRACT

An edge ring assembly for a plasma processing chamber is provided,
including: an edge ring configured to surround an electrostatic chuck (ESC) that is
configured for electrical connection to a first RF power supply, the ESC having a top
10 surface for supporting a substrate and an annular step surrounding the top surface, the
annular step defining an annular shelf that is lower than the top surface; an annular
electrode disposed below the edge ring in the annular step and above the annular
shelf; a dielectric ring disposed below the annular electrode for isolating the annular
electrode from the ESC, the dielectric ring positioned in the annular step over the
15 annular shelf; and, a plurality of insulated connectors disposed through the ESC and
through the dielectric ring, each of the plurality of insulated connectors providing
electrical connection between a second RF power supply and the annular electrode.

FIG. 1A