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ELECTRONIC KNOB FOR TUNING RADIAL ETCH NON- UNIFORMITY AT VHF FREQUENCIES

ABSTRACT OF THE DISCLOSURE

System and methods for plasma processing of a wafer include a chamber with an electrode having a support surface and an outer edge region defined thereon. A radio frequency power is communicated to the electrode via a conductive delivery connection and returned through a conductive return connection. A capacitance is applied to a first end that causes appropriate capacitive adjustment and opposite impedance adjustment at a second end of the conductive delivery connection that is coupled to a dielectric surround structure that surrounds the electrode. The dielectric surround structure presents the opposite impedance adjustment near an outer edge of the electrode, such that increasing the capacitance at the first end causes a corresponding increase of impedance at the second end and a corresponding increase in voltage distribution near the outer edge region of the electrode that decreases toward a center of the support surface of the electrode.

Fig. 1A