

ABSTRACT

METHOD AND APPARATUS FOR DC VOLTAGE CONTROL ON RF- POWERED ELECTRODE

In a plasma processing chamber, a method for processing a substrate is provided. The method includes supporting the substrate in the plasma processing chamber configured with an upper electrode (UE) and a lower electrode (LE), configuring at least one radio frequency power source to ignite plasma between the UE and the LE, and providing a conductive coupling ring, the conductive coupling ring is coupled to the LE to provide a conductive path. The method further includes providing a plasma-facing-substrate-periphery (PFSP) ring, the PFSP ring being disposed above the conductive coupling ring. The method yet further includes coupling the PFSP ring to at least one of a direct current (DC) ground through an RF filter, the DC ground through the RF filter and a variable resistor, a positive DC power source through the RF filter, and a negative DC power source through the RF filter to control plasma processing parameters.

Fig 3