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(54) Title: COLD EDGE LOW TEMPERATURE ELECTROSTATIC CHUCK

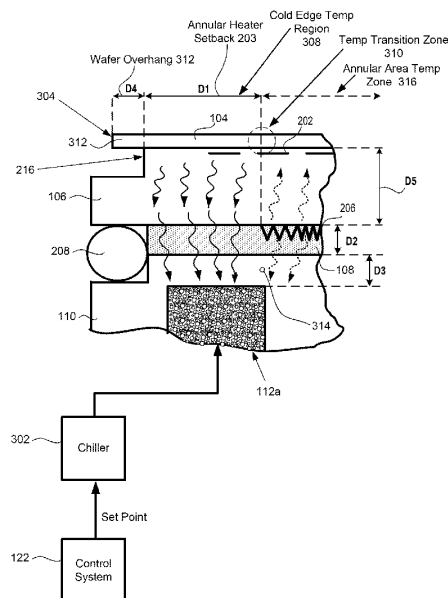


Fig. 3A

(57) Abstract: An electrostatic chuck is provided. In one example, the electrostatic chuck includes a base plate, a bond layer disposed over the base plate, a ceramic plate, and a heater. The ceramic plate includes a bottom surface disposed over the bond layer and a raised top surface for supporting a substrate. The raised top surface includes an outer diameter. The heater is disposed between the bottom surface of the ceramic plate and the bond layer. The heater element includes an inner heating element and an outer heating element. The inner heating element is arranged in a central circular area adjacent to the bottom surface of the ceramic plate and the outer heating element is arranged in an annular area that surrounds the central circular area and is adjacent to the bottom surface of the ceramic plate. An outer diameter of the outer heating element is inset from an annular heater setback region of the ceramic plate. The annular heater setback region is between the outer diameter of the raised top surface and the outer diameter of the outer heating element. The base plate includes a plurality of cooling channels. The plurality of cooling channels is disposed below the inner heating element, below the outer heating element, and below the annular heater setback region. Each of plurality of the cooling channels are configured to flow a cooling fluid to cause thermally conductive cooling in the annular heater setback region of the ceramic plate.