

ABSTRACT

METHODS AND APPARATUS FOR RAPIDLY RESPONSIVE HEAT CONTROL IN PLASMA PROCESSING DEVICES

Methods and apparatus for regulating the temperature of a component in a plasma-enhanced process chamber are provided herein. In some embodiments, an apparatus for processing a substrate includes a process chamber and an RF source to provide RF energy to form a plasma in the process chamber. A component is disposed in the process chamber so as to be heated by the plasma when formed. A heater is configured to heat the component and a heat exchanger is configured to remove heat from the component. A chiller is coupled to the heat exchanger via a first flow conduit having an on/off flow control valve disposed therein and a bypass loop to bypass the flow control valve, wherein the bypass loop has a flow ratio valve disposed therein.

Figure 1.