

ABSTRACT

The present invention relates to the field of semiconductor equipment. Provided are a substrate processing apparatus and method. The apparatus comprises a clamp mechanism, a spray head mechanism, a rotary drive mechanism, a heating mechanism, and a control mechanism. The heating mechanism comprises a heating plate arranged below a substrate, wherein the heating plate is provided with at least two cavities in a radial direction, and the cavities are distributed at different radii. During the process of the liquid nozzle moving from the center of the substrate to the edge of the substrate along the radial direction of the substrate, when the liquid nozzle moves to a certain area above the substrate, the control mechanism controls the thermal energy of fluid in the cavity located at the corresponding radius of the area, thereby improving the local temperature of the substrate below the liquid nozzle. The apparatus can dynamically and accurately control the heating of a substrate region in a partitioned manner, thereby realizing accurate control of the surface tension and the evaporation speed of a liquid on a surface of the substrate in a drying process, and avoiding damage to fine pattern structures on the surface of the substrate in the drying process.