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[54] **METHOD AND APPARATUS FOR CONTROLLING RAPID THERMAL PROCESSING SYSTEMS**

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[57] **ABSTRACT**

A rapid thermal processing system is accurately controlled during a deposition process, in which the emissivity of the substrate material changes as a function of the thickness of the deposited layer, by determining the expected emissivity as a function of time during deposition and applying the expected emissivity to a controller to produce a converted temperature which controls the radiant heat sources of the rapid thermal processing system. In one embodiment, the expected emissivity is used to convert a measured pyrometer temperature into a converted pyrometer temperature. The converted pyrometer temperature is applied to a feedback controller which controls the radiant heaters so that the converted pyrometer temperature equals the desired wafer processing temperature. In another embodiment, the expected emissivity is employed to convert the desired rapid thermal processing temperature into a converted desired rapid thermal processing temperature. The converted desired rapid thermal processing temperature is provided to the controller, which controls the radiant heaters so that the measured pyrometer temperature is equal to the converted desired rapid thermal processing temperature.

13 Claims, 3 Drawing Sheets