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[54] **SOLID STATE MICROWAVE POWERED MATERIAL AND PLASMA PROCESSING SYSTEMS**

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[58] Field of Search **219/121.43, 121.4, 121.44, 219/121.36, 10.55 B, 10.55 F, 10.55 R, 10.493**

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[57] **ABSTRACT**

A solid state microwave generator is utilized as an excitation source for material/ plasma processes. The invention provides very close precise control of the solid state device's power levels to control the ultimate power output and frequency which control is not readily possible with vacuum tube devices. Utilizing the concepts of the invention the total power generated by the system may be easily varied and, further, the power may be easily monitored and used to control other device parameters such as frequency and the like. Because of the degree of control possible within the overall process system of the invention any measurable physical property of the process such as temperature, power, color (e.g., optical pyrometer), or the like that can be monitored and converted to a control signal can be utilized by the present system to carefully control the overall process conditions. These control features are lacking in currently available vacuum tube microwave devices. It is also probable that the overall cost of the solid state based microwave power generators systems will be far less than that of comparable tube type microwave generators.

10 Claims, 4 Drawing Sheets

