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(71) Applicant: APPLIED MATERIALS, INC. [US/US]; 3050 Bowers Avenue, Santa Clara, CA 95054 (US).

(72) Inventor: VAN GOGH, James; 1239 Van Dyck Drive, Sunnyvale, CA 94087 (US).

(74) Agents: BERNADICOU, Michael, A. et al.; Blakely, Sokoloff, Taylor &amp; Zafman LLP, 7th floor, 12400 Wilshire Boulevard, Los Angeles, CA 90025 (US).

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(54) Title: RESISTIVE HEATING OF POWER COIL TO REDUCE TRANSIENT HEATING/START UP EFFECTS

## (57) Abstract

A method and apparatus for preheating a coil used to generate a plasma field in a processing chamber in a semiconductor fabrication system. The coil is preheated in the chamber prior to sputter depositing material onto a substrate and workpiece. The coil is preheated to a predetermined temperature, which is preferably equal to or greater than the equilibrium temperature attained by the coil during sputter deposition processes. Preheating may be effected with a preheating current having a frequency lower than the minimum frequency required to ignite a plasma, or when the processing chamber contains an atmosphere which prevents formation of a plasma. The coil may be preheated for a predetermined time period.

