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ada Avenue, Piedmont, CA 94611 (US). KUTHI, Andras
[US/US]; 717 Pamela Wood Street, Thousand Oaks, CA
91320 (US).

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(74) Agent: LEE, Michael; Beyer Weaver & Thomas, LLP,
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SEARCH CORPORATION [US/US]; P0527.PCT, 4650
Cushing Parkway, Fremont, CA 94538-6516 (US).(84) Designated States (*regional*): ARIPO patent (GH, GM,
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(72) Inventors; and

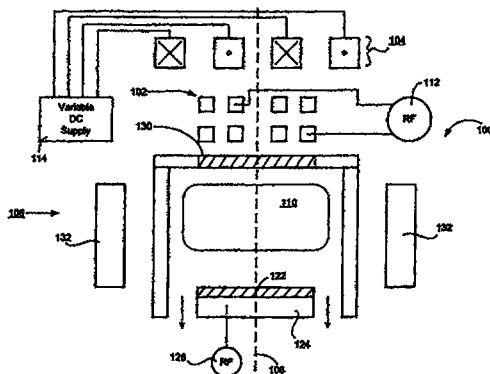
(75) Inventors/Applicants (*for US only*): BAILEY, Andrew,
D., III [US/US]; 5167 Northway Road, Pleasanton, CA
94566 (US). SCHOEPP, Alan, M. [US/US]; 10010 High-
way 9, Ben Lomond, CA 95005 (US). HEMKER, David,
J. [US/US]; 11470 Enchant Vista Avenue, San Jose, CA

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(54) Title: PLASMA PROCESSING SYSTEMS AND METHOD THEREFOR



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(57) Abstract: A plasma processing system for processing a substrate which includes a single chamber, substantially azimuthally symmetric plasma processing chamber within which a plasma is both ignited and sustained for the processing. The plasma processing chamber has no separate plasma generation chamber. The plasma processing chamber has an upper end and a lower end. The plasma processing system includes a coupling window disposed at an upper end of the plasma processing chamber and an RF antenna arrangement disposed above a plane defined by the substrate when the substrate is disposed within the plasma processing chamber for the processing. The plasma processing system also includes an electromagnet arrangement disposed above the plane defined by the substrate. The electromagnet arrangement is configured so as to result in a radial variation in the controllable magnetic field within the plasma processing chamber in the region proximate the coupling window and antenna when at least one direct current is supplied to the electromagnet arrangement. The radial variation is effective to affect processing uniformity across the substrate. The plasma processing system additionally includes a dc power supply coupled to the electromagnet arrangement. The dc power supply has a controller to vary a magnitude of at least one direct current, thereby changing the radial variation in the controllable magnetic field within the plasma processing chamber in the region proximate the antenna to improve the processing uniformity across the substrate.



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