(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
21 February 2002 (21.02.2002)

PCT

(10) International Publication Number
WO 02/15650 A2

(51) International Patent Classification[7]: H05H 1/00

(21) International Application Number: PCT/US01/25505

(22) International Filing Date: 13 August 2001 (13.08.2001)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:

09/638,075	11 August 2000 (11.08.2000)	US
09/636,435	11 August 2000 (11.08.2000)	US
09/637,174	11 August 2000 (11.08.2000)	US
09/636,436	11 August 2000 (11.08.2000)	US
09/636,434	11 August 2000 (11.08.2000)	US
09/636,699	11 August 2000 (11.08.2000)	US
09/636,700	11 August 2000 (11.08.2000)	US

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(81) Designated States *(national)*: JP, KR, SG.

(84) Designated States *(regional)*: European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR).

Published:

— *without international search report and to be republished upon receipt of that report*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

WO 02/15650 A2

(54) Title: EXTERNALLY EXCITED TORROIDAL PLASMA SOURCE

(57) Abstract: A plasma reactor for processing a workpiece, including an enclosure defining a vacuum chamber, a workpiece support within the enclosure facing an overlying portion of the enclosure, the enclosure having at least first and second openings therethrough near generally opposite sides of the workpiece support. At least one hollow conduit is connected to the first and second openings. A closed torroidal path is provided through the conduit and extending between the first and second openings across the wafer surface. A process gas supply is coupled to the interior of the chamber for supplying process gas to the torroidal path. A coil antenna is coupled to an RF power source and inductively coupled to the interior of the hollow conduit and capable of maintaining a plasma in the torroidal path.