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Akasaka Biz Tower, 3-1 Akasaka 5-chome, Minato-ku,
Tokyo 107-6325 (JP).(71) Applicant (for US only): TOKYO ELECTRON U.S.
HOLDINGS, INC. [US/US]; 2400 Grove Boulevard, Aus-
tin, Texas 78741 (US).(72) Inventors: VENTZEK, Peter; 10843 Redmond Rd, Aus-
tin, Texas 78739 (US). NEMOTO, Takenao; 1-12-3,
Kita-nakayama, Izumi-ku, Sendai, Miyagi, 981-3215 (JP).
UEDA, Hirokazu; 502 Aza-shiromizusawa 2 Nanakita
Izumiku, Sendai, Miyagi, 981-3131 (JP). KOBAYASHI,
Yuuki; Akaishidai 4-4-3, Tomiya-machi, Kurokawa-gun,
Miyagi-ken, Miyagi, 981-3332 (JP). HORIGOME,
Masahiro; 2-1 Osawa 3-chome, Izumi-ku, Sendai, Miyagi,
981-3137 (JP).(74) Agent: MATHER, Joshua; 2400 Grove Boulevard, Aus-
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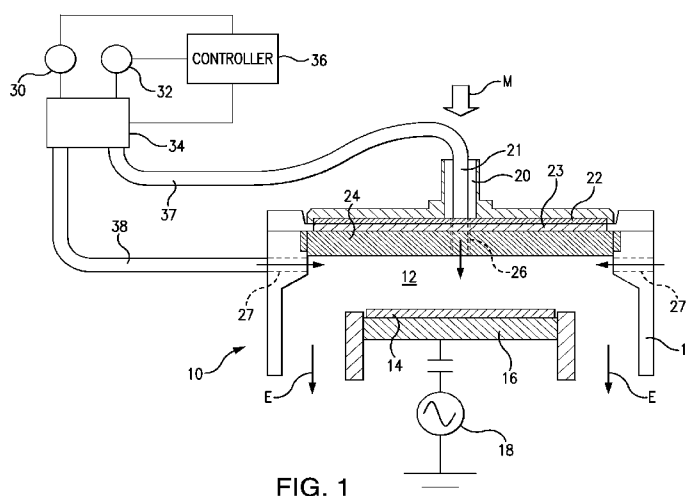


FIG. 1

(57) Abstract: A method and apparatus for doping a surface of a substrate with a dopant, with the dopant being for example phos-
phine or arsine. The doping is performed with a plasma formed primarily of an inert gas such as helium or argon, with a low concen-
tration of the dopant. To provide conformal doping, preferably to form a monolayer of the dopant, the gas flow introduction location
is switched during the doping process, with the gas mixture primarily introduced through a center top port in the process chamber
during a first period of time followed by introduction of the gas mixture primarily through peripheral or edge injection ports for a
second period of time, with the switching continuing in an alternating fashion as the plasma process.

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C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2001/0054601 A1 (DING) 27 December 2001 (27.12.2001) Entire document	1-20
Y	US 2010/0041207 A1 (LEE et al.) 18 February 2010 (18.02.2010) Entire document	1-20
Y	WO 2011/161965 A1 (KUBOTA et al.) 29 December 2011 (29.12.2011) Entire document	3
Y	US 7,939,447 B2 (BAUER et al.) 10 May 2011 (10.05.2011) Entire document	5, 9-11, 15, 17-20
Y	US 2011/0183508 A1 (CHAN et al.) 28 July 2011 (28.07.2011) Entire document	5, 15, 17-20
A	US 2012/0256238 A1 (NING et al.) 11 October 2012 (11.10.2012) Entire document	5
A	US 8,003,503 B1 (CLARK) 23 August 2011 (23.08.2011) Entire document	3
A	US 6,383,954 B1 (WANG et al.) 07 May 2002 (07.05.2002) Entire document	1-20
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