

Title (en)
HIGH REP-RATE LASER WITH IMPROVED ELECTRODES

Title (de)
LASER MIT HOHER WIEDERHOLUNGSRATE MIT VERBESSERTEN ELEKTRODEN

Title (fr)
LASER A ELECTRODES AMELIOREES A TAUX ELEVE DE REPETITION

Publication
EP 1436866 A4 20091028 (EN)

Application
EP 02759577 A 20020906

Priority

- US 0228463 W 20020906
- US 95302601 A 20010913
- US 8158902 A 20020221
- US 10450202 A 20020322

Abstract (en)
[origin: WO03023910A2] The present invention provides a gas discharge laser having at least one long-life elongated electrode for producing at least 12 billion high voltage electric discharges in a fluorine containing laser gas. In a preferred embodiment at least one of the elctrodes is comprised of a first material having a relatively low anode erosion rate and a second anode material having a relatively higher anode erosion rate. The first anode material is positioned at a desired anode discharge region of the electrode. The second anode material is located adjacent to the first anode material along at least two long sides of the first material. During operation of the laser erosion occurs on both materials but the higher ero sion rate of the second material assures that any tendency of the discharge to spread onto the second material will quickly erode away the second material enough to stop the spread of the discharge. In a preferred embodiment the anode is as described above and the cathode is also a two-material electrode with the first material electrode with the first material at the discharge region being C26000 brass and the second material being C36000 brass. A pulse power system provides electrical pulses at rates of at least 1 KHz. A blower circulates laser gas between the electrodes at speeds of at least 5 m/s and a heat exchanger is provided to remove heat produced by the blower and the discharges.

IPC 8 full level
C22C 9/04 (2006.01); **H01S 3/225** (2006.01); **H01S 3/038** (2006.01); **H01S 3/036** (2006.01)

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Citation (search report)

- [X] WO 9960679 A1 19991125 - CYMER INC [US], et al
- [A] DE 4401892 A1 19950727 - LAMBDA PHYSIK FORSCHUNG [DE]
- [A] JP H1168196 A 19990309 - NISSIN ELECTRIC CO LTD
- [A] JP S6348874 A 19880301 - MATSUSHITA ELECTRIC IND CO LTD
- [PA] WO 0237626 A1 20020510 - CYMER INC [US], et al
- [PA] WO 0197345 A1 20011220 - CYMER INC [US], et al
- See references of WO 03023910A2

Citation (examination)
WO 0197344 A1 20011220 - CYMER INC [US], et al

Designated contracting state (EPC)
DE NL

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WO 03023910 A2 20030320; WO 03023910 A3 20030530; EP 1436866 A2 20040714; EP 1436866 A4 20091028; JP 2005503027 A 20050127; JP 3971382 B2 20070905; KR 100940782 B1 20100211; KR 20040031790 A 20040413

DOCDB simple family (application)
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