Abstract: Thermal chucks for processing semiconductor substrates include a cooling passage (106) that provides a laminar flow. The thermal chuck can be fabricated by forming the cooling passage into a selected one of a planar support surface portion (102) and an underside portion (104), sandwiching a cladding material between the planar support surface portion and the underside portion to form a thermal chuck assembly, and heating the thermal chuck assembly to a temperature and under conditions to fuse the cladding material to the planar support surface portion and the underside portion, wherein the cooling passage is sealed therein. The cooling passage can be milled or cast and has radially curved section connected to adjacent linear sections to form a serpentine like shape.
**INTERNATIONAL SEARCH REPORT**

**International application No**

PCT/US2007/006067

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**A. CLASSIFICATION OF SUBJECT MATTER**

INV. B23K1/00 B23K1/008 H01L21/00

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**B23K1/00**

**B23K1/008**

**H01L21/00**

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According to International Patent Classification (IPC) in bold national classification and IPC

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**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

**HOIL**

**B23K**

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Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

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**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

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<th>Category</th>
<th>Citation of document with indication where appropriate of the relevant passages</th>
<th>Relevant to claim No</th>
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<td>X</td>
<td>US 6 511 759 B1 (SCHALANSKY CARL [US]) 28 January 2003 (2003-01-28) column 7 column 8, lines 38-53 column 9, line 49 - column 10, line 29 column 11, line 63 - column 12, line 59 figures 2,6</td>
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<td>JP 2006 049568 A (NHK SPRING CO LTD) 16 February 2006 (2006-02-16) English abstract, figures and paragraphs 1, 12, 13, 15 - 18, 26, 35 - 36</td>
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<td>US 6 147 334 A (HANNIGAN JOHN H [US]) 14 November 2000 (2000-11-14) column 3, line 39 - column 4, line 49 column 5, line 21 - column 6, line 11 column 6, line 66 - column 7, line 8 figures 1,2,12-17,28,30</td>
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**D**

Further documents are listed in the continuation of Box C

**X**

See patent family annex

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**Date of the actual completion of the international search**

27 August 2007

**Date of mailing of the international search report**

04/09/2007

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**Name and mailing address of the ISA/Offices**

European Patent Office
P B 5818 Patentlaan 2
NL - 2280 HV RIJSWIJK
Tel (+31-70) 340-2040
Tx 31651 epo nl.
Fax (+31-70) 340-3016

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**Authorized officer**

Melodi a, Andrea

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Form PCT/ISA/210 (second sheet) (April 2005)
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<td>US 6511759 B1</td>
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