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

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
15 April 2004 (15.04.2004)

PCT

(10) International Publication Number
WO 2004/032231 A2

(51) International Patent Classification[7]: H01L 23/473

(21) International Application Number:
PCT/EP2003/010800

(22) International Filing Date:
29 September 2003 (29.09.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
102 46 990.3 2 October 2002 (02.10.2002) DE

(71) Applicant *(for all designated States except US)*: **ATOTECH DEUTSCHLAND GMBH** [DE/DE]; Erasmusstrasse 20, 10553 Berlin (DE).

(72) Inventors; and

(75) Inventors/Applicants *(for US only)*: **MEYER, Heinrich** [DE/DE]; Bismarckstrasse 8B, 14109 Berlin (DE). **CRÄMER, Konrad** [DE/DE]; Jänickestrasse 37, 14167 Berlin (DE). **KURTZ, Olaf** [DE/DE]; Kantstrasse 92, 10627 Berlin (DE). **HERBER, Ralph** [DE/DE]; Hausstockweg 36, 12107 Berlin (DE). **PRECHTL, Peter** [DE/DE]; Peter-Putz-Strasse 8, 81241 München (DE). **THEISEN, Sven** [DE/DE]; Ernst-Heimeran-Weg 14, 82319 Starnberg (DE). **HÖHN, Markus** [DE/DE]; Pfarrer-Hobmair-Weg 7, 82041 Oberhaching (DE).

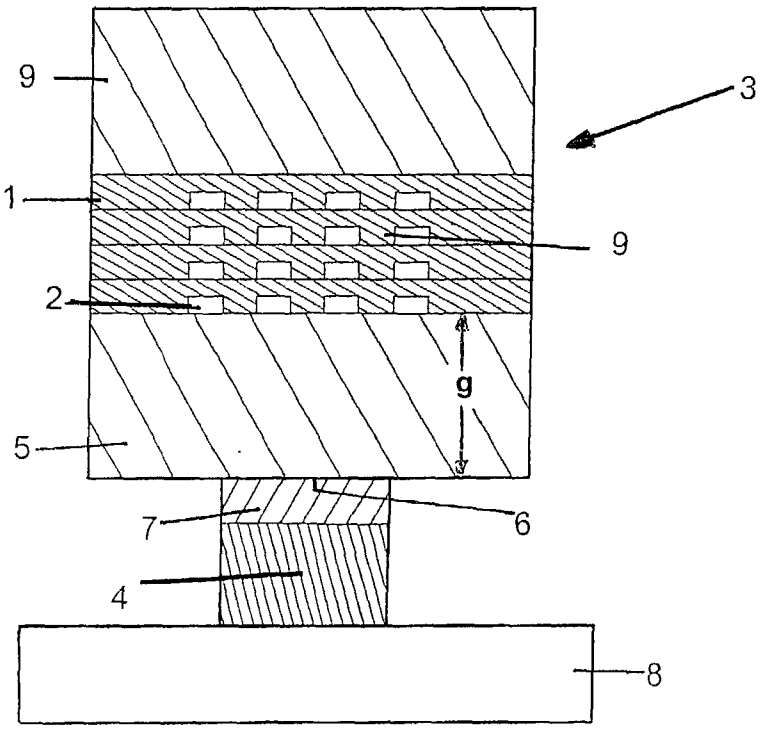
(74) Agent: **EFFERT, BRESSEL UND KOLLEGEN**; Radickestrasse 48, 12489 Berlin (DE).

(81) Designated States *(national)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States *(regional)*: ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

[Continued on next page]

(54) Title: MICRO-STRUCTURE COOLING DEVICE AND USE THEREOF



(57) Abstract: The invention relates to a micro-structure cooling device (3) for an object (4) to be cooled, whereby the cooling device (3) includes a stack of at least two metal foils (1) and one base plate (5) that can be brought via a thermal contact surface (6) into thermal contact with the object (4), the metal foils (1) and the base plate (5) are joined to one another in a material fit, present in the metal foils (1) are channels (2) for cooling medium, and the channels (2) have a width in the range of from 100 to 2,000 µm, a depth in the range of from 25 to 1,000 µm and a mean interval in the range of from 50 to 1,000 µm, the residual foil thickness resulting from the channels (2) in the metal foils (1) are in the range of from 50 to 300 µm, and the base plate (5) has a thickness in the range of from 200 to 2,000 µm.

WO 2004/032231 A2

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.