

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

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
28 August 2008 (28.08.2008)

PCT

(10) International Publication Number
WO 2008/103964 A3

(51) International Patent Classification:
B24B 49/00 (2006.01)

(74) Agent: ZANOCCO, Jennifer A.; P.O. Box 1022, Minneapolis, Minnesota 55440-1022 (US).

(21) International Application Number:
PCT/US2008/054807

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FT, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW

(22) International Filing Date:
22 February 2008 (22.02.2008)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/891,487 23 February 2007 (23.02.2007) US

(71) Applicant (for all designated States except US): APPLIED MATERIALS, INC. [US/US]; 3050 Bowers Avenue, Santa Clara, California 95054 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): LEE, Harry Q. [US/US]; 1501 Ben Roe Drive, Los Altos, California 94024 (US). SWEDEK, Boguslaw A. [PL/US]; 10315 A El Prado Way, Cupertino, California 95014 (US). BENVEGNU, Dominic J. [US/US]; 241 Beverly Drive, La Honda, California 94020 (US). DAVID, Jeffrey Drue [US/US]; 2208 Marques Avenue, San Jose, California 95125 (US).

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL, NO, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— with international search report

(88) Date of publication of the international search report:
27 November 2008

(54) Title: USING SPECTRA TO DETERMINE POLISHING ENDPOINTS

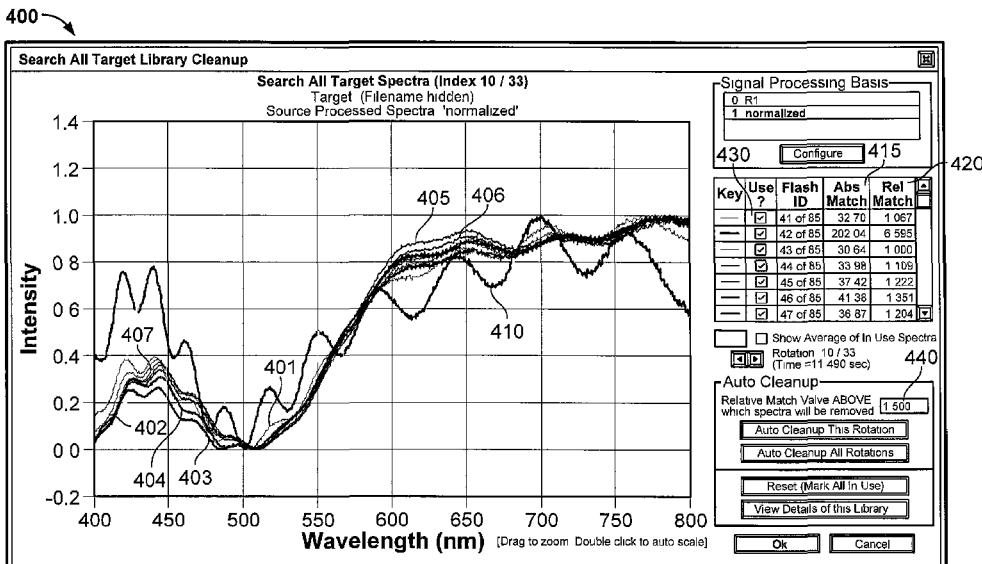


FIG. 4

WO 2008/103964 A3

(57) **Abstract:** Methods of determining a polishing endpoint are described using spectra obtained during a polishing sequence. In particular, techniques for using only desired spectra, faster searching methods and more robust rate determination methods are described.

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2008/054807

A CLASSIFICATION OF SUBJECT MATTER

IPC(8) - B24B 49/00 (2008.04)

USPC - 451/5

According to International Patent Classification (IPC) or to both national classification and IPC

B FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC(8) - B24B 49/00 (2008.04)

USPC - 451/5

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

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

USPTO EAST System (US, USPG-PUB, EPO, DERWENT), MicroPatent, Google Patent

C DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No
X	US 2007/0042675 A1 (BENVENGU et al) 22 February 2007 (22 02 2007) entire document	7, 13, 14, 20
Y	US 2004/0203177 A1 (DAVIES et al) 14 October 2004 (14 10 2004) entire document	1-5, 8-12, 15-18
Y		1-5, 8-12, 15-18

Further documents are listed in the continuation of Box C

D

* Special categories of cited documents

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance, the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance, the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

Date of mailing of the international search report

02 July 2008

11 JUL 2008

Name and mailing address of the ISA/US

Mail Stop PCT, Attn ISA/US, Commissioner for Patents
P O Box 1450, Alexandria, Virginia 22313-1450
Facsimile No 571-273-3201

Authorized officer

Blaine R Copenheaver

PCTHelpdesk 571-272-4300
PCTOSP 571-272-7774

INTERNATIONAL SEARCH REPORT

International application No

PCT/US2008/054807

Box No. II Observations **where certain claims were found unsearchable (Continuation of item 2 of first sheet)**

This international search report has not been established in respect of certain claims under Article 17(2Xa) for the following reasons

- 1 I Claims Nos because they relate to subject matter not required to be searched by this Authority, namely
- 2 I Claims Nos because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically
- 3 I Claims Nos 6, 19 because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6 4(a)

Box No. III Observations **where unity of invention is lacking (Continuation of item 3 of first sheet)**

This International Searching Authority found multiple inventions in this international application, as follows

- 1 I As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims
- 2 I As all searchable claims could be searched without effort justifying additional fees, this Authority did not invite payment of additional fees
- 3 I As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos
- 4 I No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims, it is covered by claims Nos

Remark on Protest

- The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee
- The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation
- I No protest accompanied the payment of additional search fees