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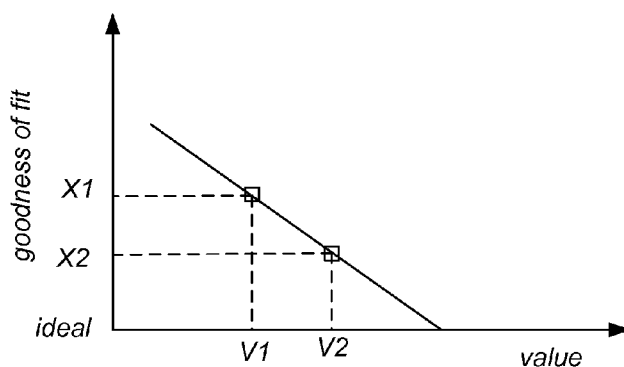
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(54) **Title:** MULTIPLE MATCHING REFERENCE SPECTRA FOR IN-SITU OPTICAL MONITORING



**FIG. 13**

(57) **Abstract:** A method of controlling polishing includes storing a plurality of libraries, each library including a plurality of reference spectra, polishing a substrate, measuring a sequence of spectra of light from the substrate during polishing, and for each measured spectrum of the sequence of spectra, finding a best matching first reference spectrum from a first library from the plurality of libraries and finding a best matching second reference spectrum from a different second library from the plurality of libraries, determining a first value associated with the best matching first reference spectrum and determining a second value from the best matching second reference spectrum, and calculating a third value from the first value and the second value to generate a sequence of calculated third values. At least one of a polishing endpoint or an adjustment for a polishing rate can be determined based on the sequence of calculated third values.



## INTERNATIONAL SEARCH REPORT

International application No.  
**PCT/US2011/055814****A. CLASSIFICATION OF SUBJECT MATTER****HOIL 21/304(2006.01)i, HOIL 21/66(2006.01)I**

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)

HOIL 21/304; B24B 49/02; B24B 49/04; G01J 3/00; B24B 49/12; B24B 49/00; H01L 21/461

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

Korean utility models and applications for utility models

Japanese utility models and applications for utility models

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

eKOMPASS(KIPO internal) &amp; Keywords: CMP, reference spectra, extrapolating, polishing end point

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2010-0261413 A1 (RAVID; ABRAHAM et al.) 14 October 2010 See claim 1.	1-15
A	US 2010-0105288 A1 (DAVID; JEFFREY DRUE et al.) 29 April 2010 See claim 1, 9.	1-15
A	US 2008-0206993 A1 (LEE; HARRY Q. et al.) 28 August 2008 See claim 7.	1-15
A	US 2003-0184732 A1 (VLADIMIR; KATZ et al.) 02 October 2003 See claim 1, 8.	1-15

 Further documents are listed in the continuation of Box C. See patent family annex.

\* Special categories of cited documents:

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"&amp;" document member of the same patent family

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Information on patent family members

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