

(19) World Intellectual Property Organization  
International Bureau



(43) International Publication Date  
28 March 2002 (28.03.2002)

PCT

(10) International Publication Number  
**WO 02/25271 A2**

- (51) International Patent Classification<sup>7</sup>: **G01N 33/20**
- (21) International Application Number: PCT/US01/29235
- (22) International Filing Date:  
19 September 2001 (19.09.2001)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:  
09/665,845 20 September 2000 (20.09.2000) US
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- (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, 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, NO, NZ, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW.
- (84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).
- 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.*



**WO 02/25271 A2**

(54) Title: A METHOD FOR QUANTIFYING THE TEXTURE HOMOGENEITY OF A POLYCRYSTALLINE MATERIAL

(57) Abstract: A method for quantifying the texture homogeneity of a polycrystalline material is described. The method involves selecting a reference pole orientation; scanning in increments a cross-section of the polycrystalline material having a thickness with scanning orientation imaging microscopy or other measuring technique to obtain actual pole orientations of a multiplicity of grains throughout the cross-section of the polycrystalline material. The orientation differences between the reference pole orientation and actual pole orientations of a multiplicity of grains is then determined. A value of misorientation from the reference pole orientation at each grain measured throughout the thickness is then assigned. The average misorientation of each measured increment throughout the thickness is then determined. A texture gradient and/or texture banding can then be obtained by determining the first and/or second derivative, respectively, of the average misorientation of each measured increment through the thickness of the sample used for evaluation. A method to predict the sputtering efficiency of a target is also described as well as a system for quantifying the texture homogeneity of a polycrystalline material.