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(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.



WO 02/025271 A3