ANALISIS TEKSTUR KRISTAL TUNGGAL Cu MENGGUNAKAN PROGRAM *MATERIALS ANALYSIS USING DIFFRACTION (MAUD)*

Tri Hardi P. dan Nadi Suparno
Pusat Teknologi Bahan Industri Nuklir (PTBIN) - BATAN
Kawasan Puspiptek, Serpong 15314, Tangerang

ABSTRAK

ANALISIS TEKSTUR KRISTAL TUNGGAL Cu MENGGUNAKAN PROGRAM *MATERIALS ANALYSIS USING DIFFRACTION (MAUD)*. Telah dilakukan analisis tekstur pada kristal tunggal Cu dengan menggunakan Difraktometer Tekstur (DN2). Dari percobaan difraksi neutron ditunjukkan bahwa kristal tungal terorientasi ke bidang (111) dan data *step scan* (χ, ϕ) menunjukkan adanya puncak-puncak Bragg pada (χ, ϕ) = { (0,0), (0,70), (0,180), (5,0), (5,70), (5,180), (10,0)}. Didasarkan pada proyeksi stereografik tersebut diketahui bahwa puncak-puncak tersebut berasal dari simetri (111). Data dari *step scan* (χ, ϕ) dianalisis menggunakan paket *software Material Analysis Using Diffraction* (*MAUD*) untuk mendapatkan *pole figure* (111), dan dari *pole figure* (111) ditunjukkan bahwa tidak ada bidang lain selain keluarga (111) yang terlihat. Dari hasil *refinement* tekstur diperoleh *goodness of fitting* (σ) = 2,94, *crystallographics weighted error* (R_w) = 17,73 % dan *texture error* (R_p) = 9,47%.

Kata kunci : Kristal tunggal, *Pole figure*, *Preferred orientation*, *Texture*, *MAUD*

ABSTRACT

ANALYSIS OF Cu SINGLE CRYSTAL TEXTURE USING MATERIALS ANALYSIS USING DIFFRACTION (MAUD). Texture analysis of Cu single crystal has been performed using Texture Diffractometer (DN2). From neutron diffraction experiment was shown that the Cu single crystal is oriented to (111) plane and from (χ, ϕ) step scan data, it was shown that some Bragg peaks appear at (χ, ϕ) = ((0,0), (0,70), (0,180), (5,0), (5,70), (5,180), (10,0)). Based on the stereographic projection it was found that these peaks come from the symmetry of (111). Data from (χ, ϕ) step scan was analyzed using MAUD software package to obtain (111) pole figure. It is shown from (111) pole figure no planes other than (111) family planes appear. From texture refinement goodness of fitting (σ) = 2.94, crystallographics weighted error (R_w) = 17.73% and texture error (R_p) = 9.47% are obtained.

Key words : Single Crystal, Pole figure, Preferred orientation, Texture, MAUD