Bede REFS 4 Report

SUMMARY

Company: Bede Scientific Incorporated, USA

Equipment:

Operator: Matthew Wormington

Lot:

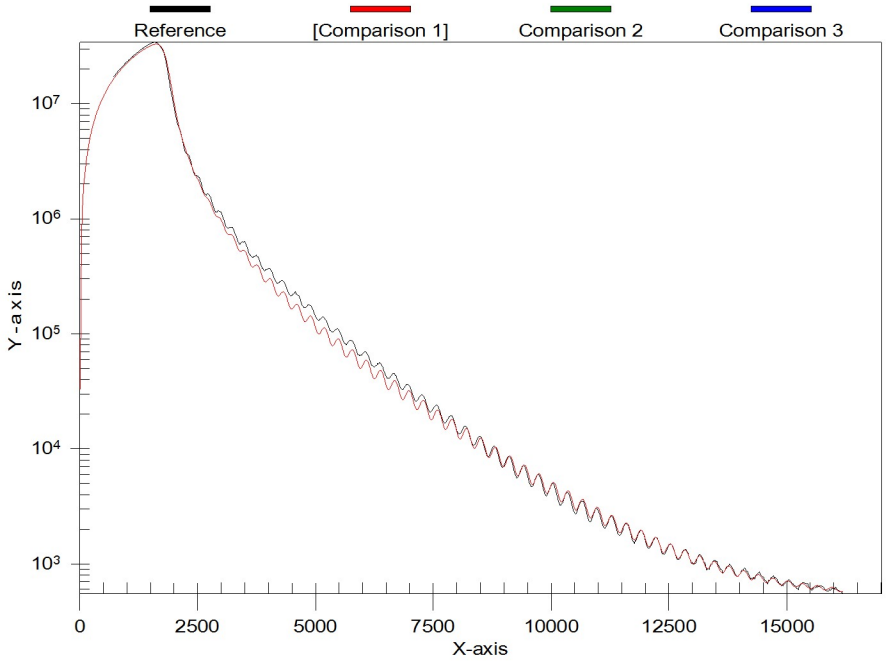
Carrier:

Substrate:

Site:

Comments: Bede REFS example file: Ta layer atop Al2O3 substrate. The specular X-ray reflectivity were measured using CuKa radiation.

Description: Specular X-ray reflectivity scan assuming 2.709 Å radiation. The incident and background intensities are 279999697.12 cps and 559.57 cps, respectively. The sample angle (Omega) starts at 10 sec, and finishes at 16200 sec with a step-size of 8 sec. Simultaneously, the detector angle (2Theta) starts at 20 sec and finishes at 32400 sec with a step-size of 16 sec.



FILES

Model: Default

Reference: C:\Users\Ìèõàèë\Desktop\Ó÷åáà\Íàíîìåòðîëîãèÿ\Äèôðàêòîìåòðèÿ\Ñøèâêà.txt

Comparison 1:

Comparison 2:

Comparison 3:

Goodness-of-fit:

ID	THICKNESS (Å)	MATERIAL	X	Y	DENSITY (%)	ROUGHNESS (Å)	GRADING (Å)	LAMELLAE	PERIODS
SUB.	¥	Si	0.000	0.000	100.00	4.19	2.34	1	
1	890.38	Al2O3	0.000	0.000	100.00	5.09	1.49	1	

EQUIPMENT

Incident Beam

Width:	1.4 mm
Height:	12 mm
Divergence:	197 sec

Detector Slits

Width:	12 mm
Height:	18 mm
Distance to sample:	26 cm
Acceptance:	9518.2 sec
Include Equipment Function:	þ

MEASUREMENT

Scan Type:	Specular
Wavelength:	2.709 Å
Intensity:	279999697.12 cps
Background:	559.57 cps

Sample (w) Axis

Start:	10 sec
Finish:	16200 sec
Step:	8 sec

Detector (2q) Axis

Start:	20 sec
Finish:	32400 sec
Step:	16 sec
Data points =	2025

SAMPLE

Advanced Roughness

Roughness model:	Uncorrelated Interfaces
Correlation length:	10000 Å
Fractal exponent:	1
Miscut angle	0 deg

Dimensions

Length:	26 mm
Width:	30 mm
Radius of curvature:	290 m

OPTIONS

Units

Angle units:	Seconds
Length units:	Ångstroms
Output units:	Real Space

Diffuse Scans

Include specular intensity:	þ
Use C(r) instead of exp[C(r)-1]:	o
Use modified Born approximation:	o

DATA-FITTING

Strategy:	DE/rand/1/bin
Population size:	10
Crossover factor:	0.5
Mutation factor:	0.7
GOF function:	MAE (log10)

Complete When

þ**Iterations =**	5000
o**Generations =**	1000
o**Elapsed time (s) =**	600
o**GOF function <=**	1