

DISTRICT	Rosebud
DIST_NO	4010
COUNTY	Pershing
If different from written on document	
TITLE	Project: X-ray diffraction analysis of mineral samples from the Rosebud Mine, Nevada, and comparison to PIMA mineralogy
AUTHOR	Allen K; Wendlandt; R
DATE OF DOC(S)	1999
MULTI_DIST	<input checked="" type="checkbox"/> Y / <input type="checkbox"/> N?
Additional Dist_Nos:	
QUAD_NAME	Sulphur 7½'
P_M_C_NAME (mine, claim & company names)	Rosebud Mine; Rosebud Project
COMMODITY	gold, silver
If not obvious	
NOTES	XRD printouts; correspondence NOTE: Scan front of folder 61p

Keep docs at about 250 pages if no oversized maps attached
(for every 1 oversized page (>11x17) with text reduce
the amount of pages by ~25)

SS: DP 9/9/08
Initials Date
DB:
Initials Date
SCANNED:
Initials Date

Travis -

If you have any questions
about the interpretation, then
give me a call

Yours

R. Wendlandt

CLAY X-RD

66001892

4010

6600 1892

4010

INVOICE

TO: Kurt Allen
Rosebud Project
P.O. Box 2610
Winnemucca, NV 89446

FROM: Richard F. Wendlandt
Dept. of Geology
Colorado School of Mines
Golden, CO 80401

DATE: October 19, 1999

SERVICE:

Sample disaggregation/preparation for XRD analyses; whole-rock XRD analyses, including multiple preparations and scans for samples RBX-7 through RBX-11; analysis and interpretation of data; report preparation.

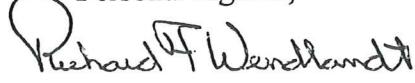
RATES:

6 samples requiring 1 scan	\$70.00/sample	\$420.00
5 samples requiring multiple preps. and scans	\$90.00/sample	\$450.00

AMOUNT DUE: \$870.00

PAYABLE TO: Richard F. Wendlandt
s.s.#: 003-42-8377

Personal regards,



Richard F. Wendlandt

86-5010-592



INTERPRETATIONS OF XRD ANALYSES

<u>Sample</u>	<u>Mineral phases</u>
RBX-1	Alunite; kaolinite; quartz; minor smectite-bearing phase.
RBX-2	Nacrite; quartz; minor smectite-bearing phase.
RBX-3	Nacrite; quartz; minor smectite-bearing phase (possibly corrensite - mixed layer chlorite-smectite).
RBX-4	7-angstrom mineral (kaolinite or dickite) not resolved due to poor definition of (hkl) reflections (caused by disorder or small amount of the mineral); alunite; quartz; minor smectite-bearing phase.
RBX-5	Kaolinite; minor quartz.
RBX-6	Kaolinite and/or halloysite mixture (disordered); minor alunite; minor quartz.
RBX-7	Mixed layer chlorite-smectite with 70-80% chlorite layers (the presence of a superlattice reflection at 31-angstroms is suspected but not pronounced); minor quartz.
RBX-8	Mixed layer illite-smectite with 80-90% illite layers ($R=3$); kaolinite; minor quartz.
RBX-9	Corrensite (ordered mixed layer chlorite-smectite, $R=1$) and mixed layer illite-smectite with 70-80% illite layers ($R=1$); quartz.
RBX-10	Corrensite (mixed layer chlorite-smectite, $R=1$); minor quartz; minor kaolinite.
RBX-11	Mixed layer illite-smectite with 60% illite layers ($R=1$); calcite; minor quartz; chlorite; minor kaolinite (?); gypsum (?).

**PROJECT: X-RAY DIFFRACTION ANALYSIS OF MINERAL SAMPLES FROM
THE ROSEBUD MINE, NEVADA, AND COMPARISON TO PIMA MINERALOGY**

Analyst: Richard F. Wendlandt, Oct. 19, 1999

OBJECTIVE

Eleven samples from the Rosebud Mine, Nevada, were received for X-ray diffraction (XRD) analysis on Oct. 12, 1999. Samples were collected and delivered to CSM by Travis Schwertfeger. Mineral identifications were requested to enable confirmation of mineralogy based on PIMA. All samples were analyzed using routine powder XRD methods. Minerals were identified using the 1993 JCPDS data base on CD-ROM and clay mineral identification procedures recommended by Moore and Reynolds (1997) and Brindley and Brown (1980).

ANALYTICAL METHODS

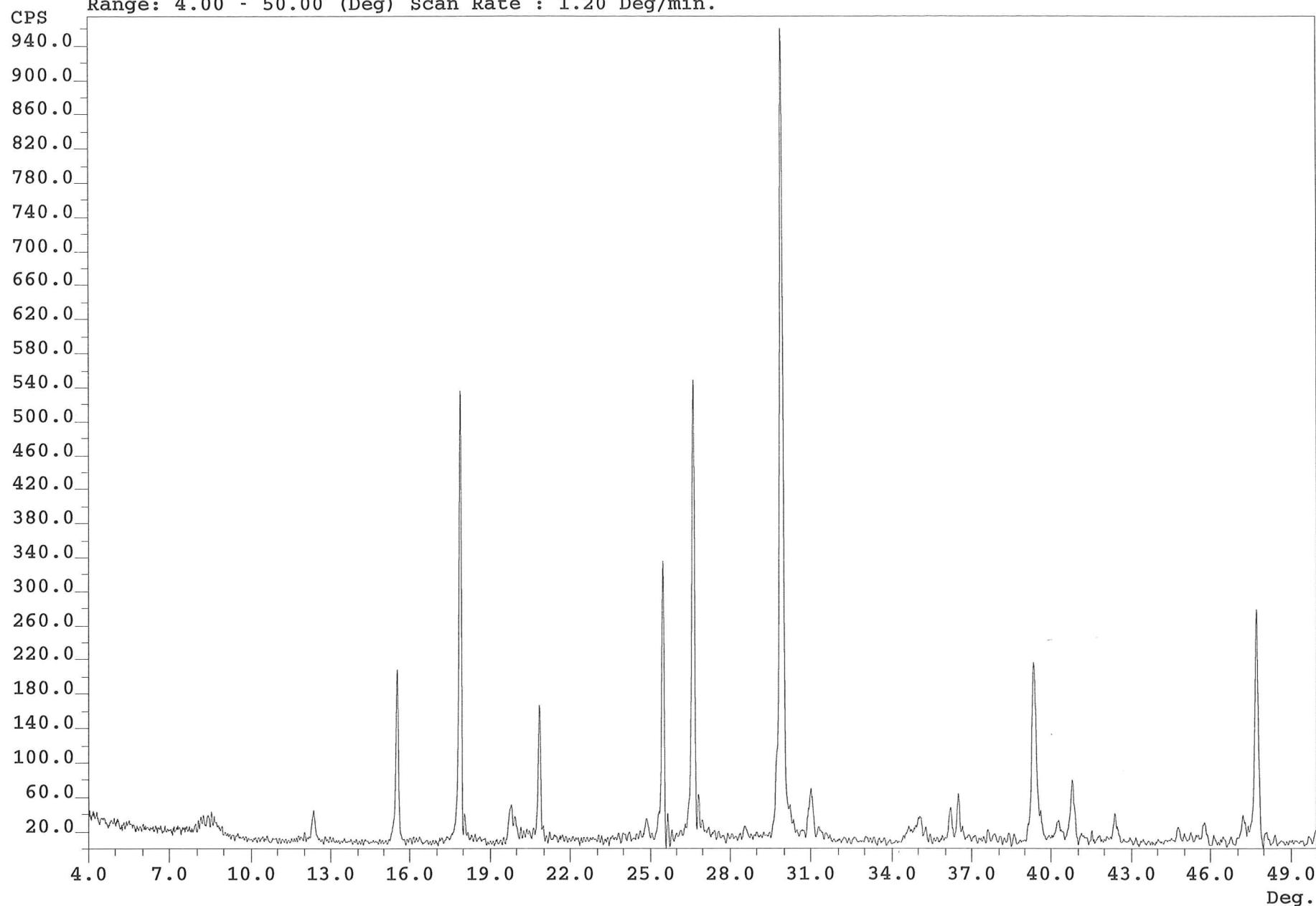
The samples, as received, appeared to be hand-picked concentrates up to several cm in diameter. Samples were dry ground to a fine grain size in a corundum mortar-and-pestle and prepared for analysis as randomly oriented packed powder mounts and as oriented grain mounts, as necessary. Powders were subsequently analyzed using a Scintag XDS-2000 Θ - Θ diffractometer. Instrumental conditions were 40 KV accelerating potential, 40 mA filament current, and 0.5 and 0.3 mm receiving slits. One additional scan was made using 0.3 and 0.1 mm receiving slits in order to resolve better the superlattice d-spacing in sample RBX-11. Continuous diffraction scans, obtained at a scan rate of 1.2 or 2 degrees/minute, were collected covering the interval from 2° - 50° 2Θ . The samples were rotated during analysis. Graphical presentations are corrected for $K_{\alpha 2}$ contributions. Background has not been subtracted from the graphs. A 3-point smoothing function was applied prior to printing the diffraction patterns.

The mineral interpretations for samples RBX-1 through RBX-6 are based on single XRD scans using packed powder mounts. For samples RBX-7 through RBX-11, multiple preparations of each were made and analyzed, including a randomly oriented mount of the bulk sample, an oriented mount, and ethylene glycol-saturated oriented mount. Sample glycolation is a routine treatment to determine the presence of expansive (smectite-group) and mixed layer minerals. Mineral identification by XRD is possible if minerals are present in abundances greater than 1-2 %. The actual limit of resolution varies, however, with mineral type.

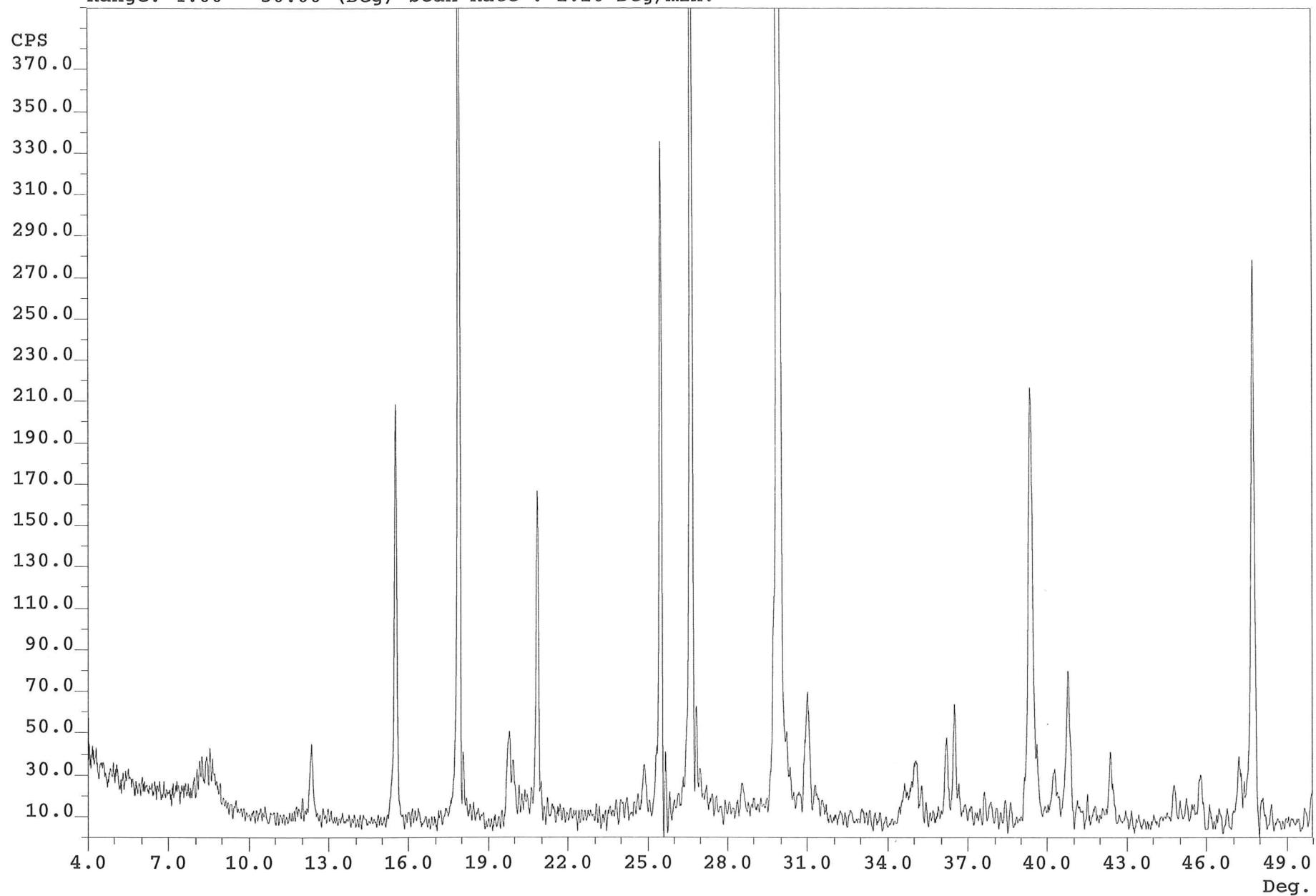
DATA PRESENTATIONS

A summary table of the mineralogy for the 11 samples is presented below. XRD patterns for each sample are appended in Appendices 1-11. Duplicate presentations of the XRD patterns are provided at reduced intensity (vertical axis) to define better the locations of low intensity reflections. Presentations containing multiple diffraction patterns are included for those samples that underwent glycolation and reanalysis. These graphs enable rapid visualization of the effects of sample orientation and treatment on lattice spacings.

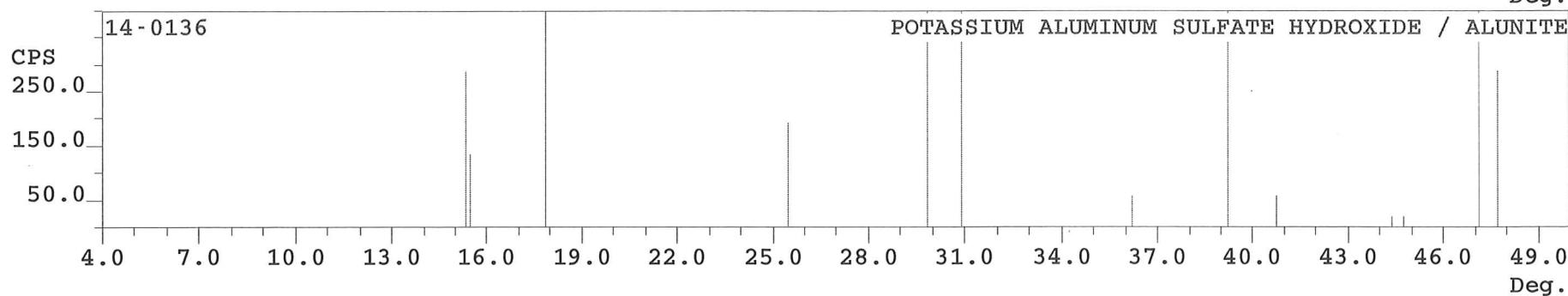
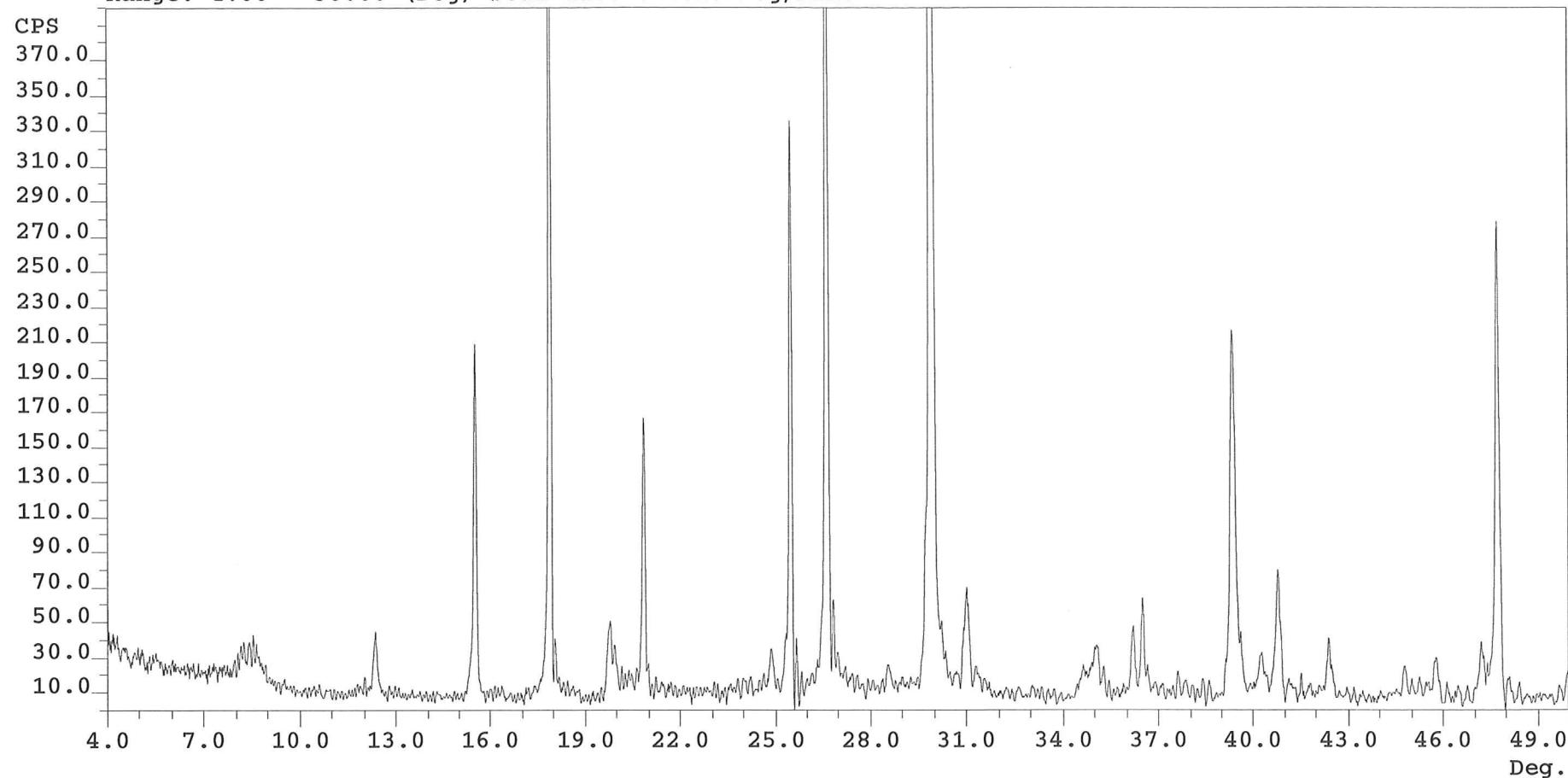
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Range: 4.00 - 50.00 (Deg) Scan Rate : 1.20 Deg/min.



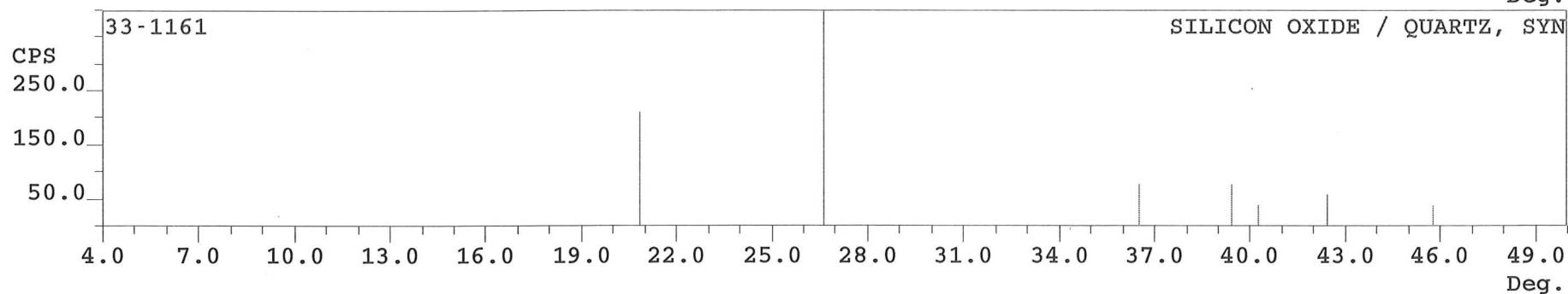
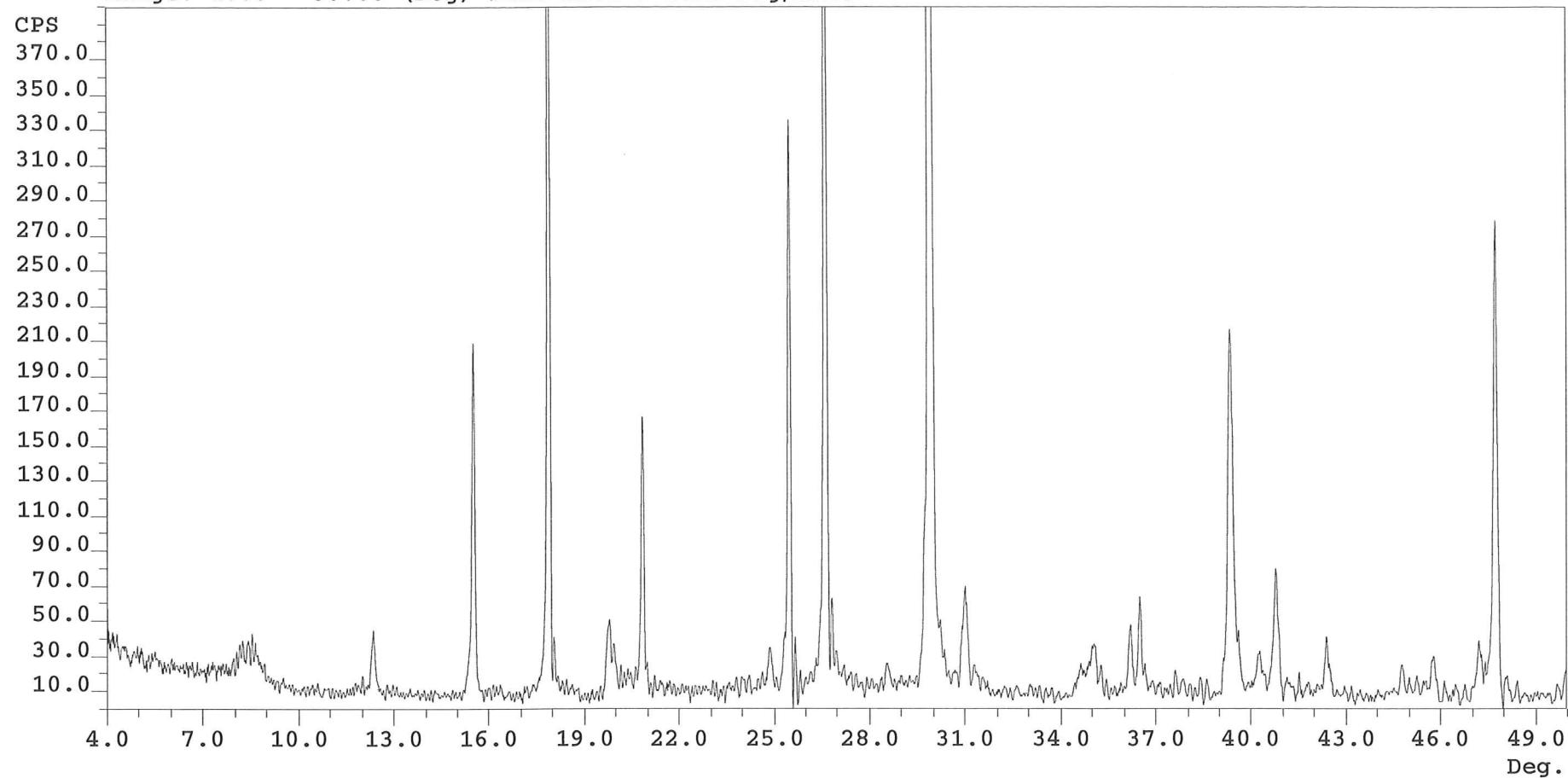
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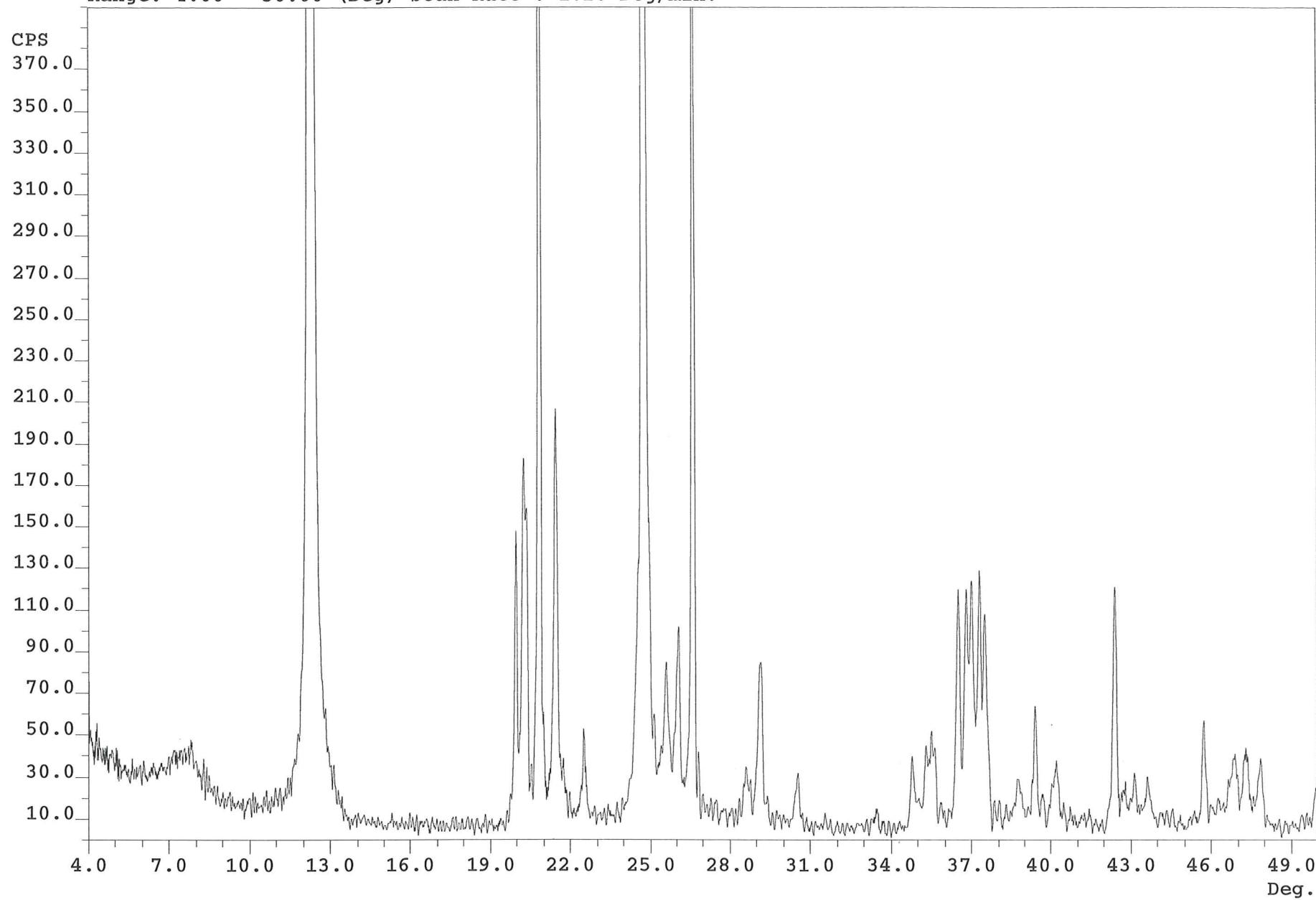
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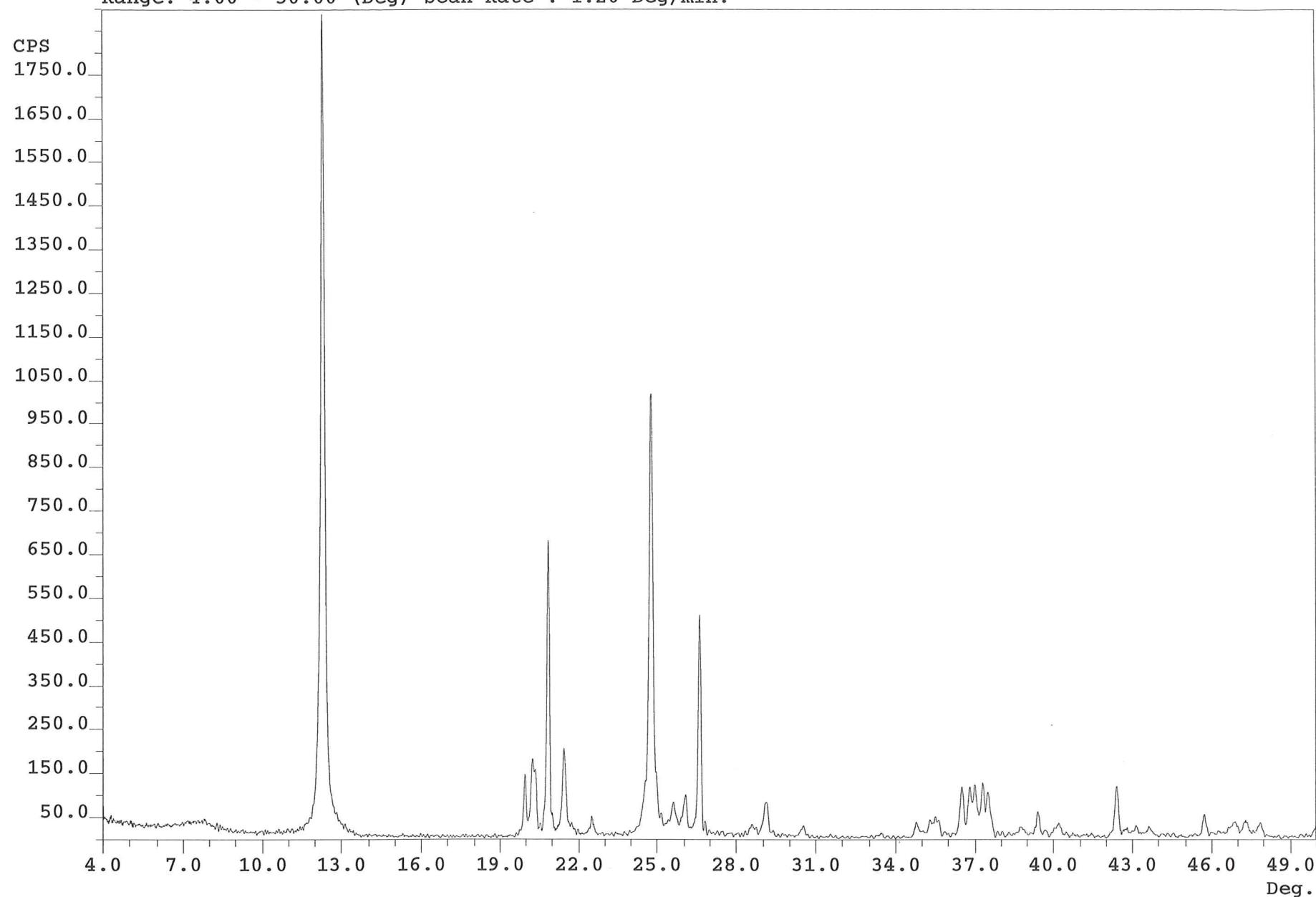
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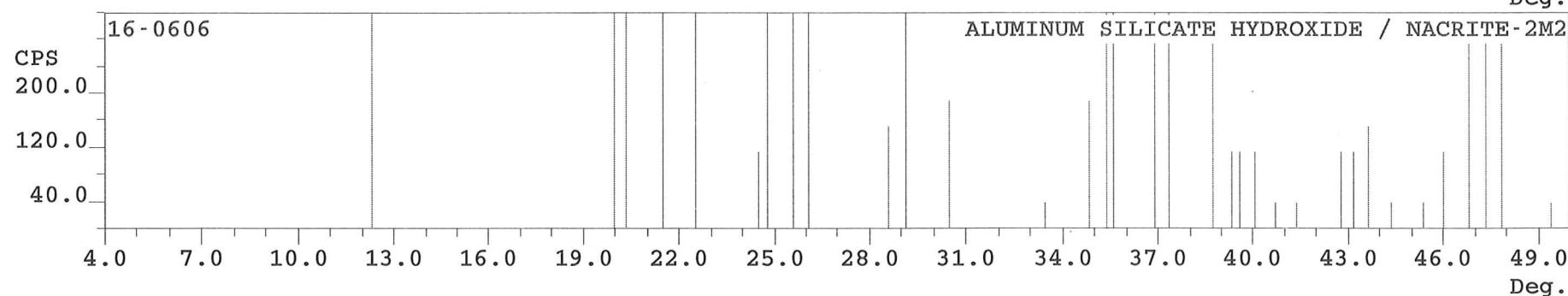
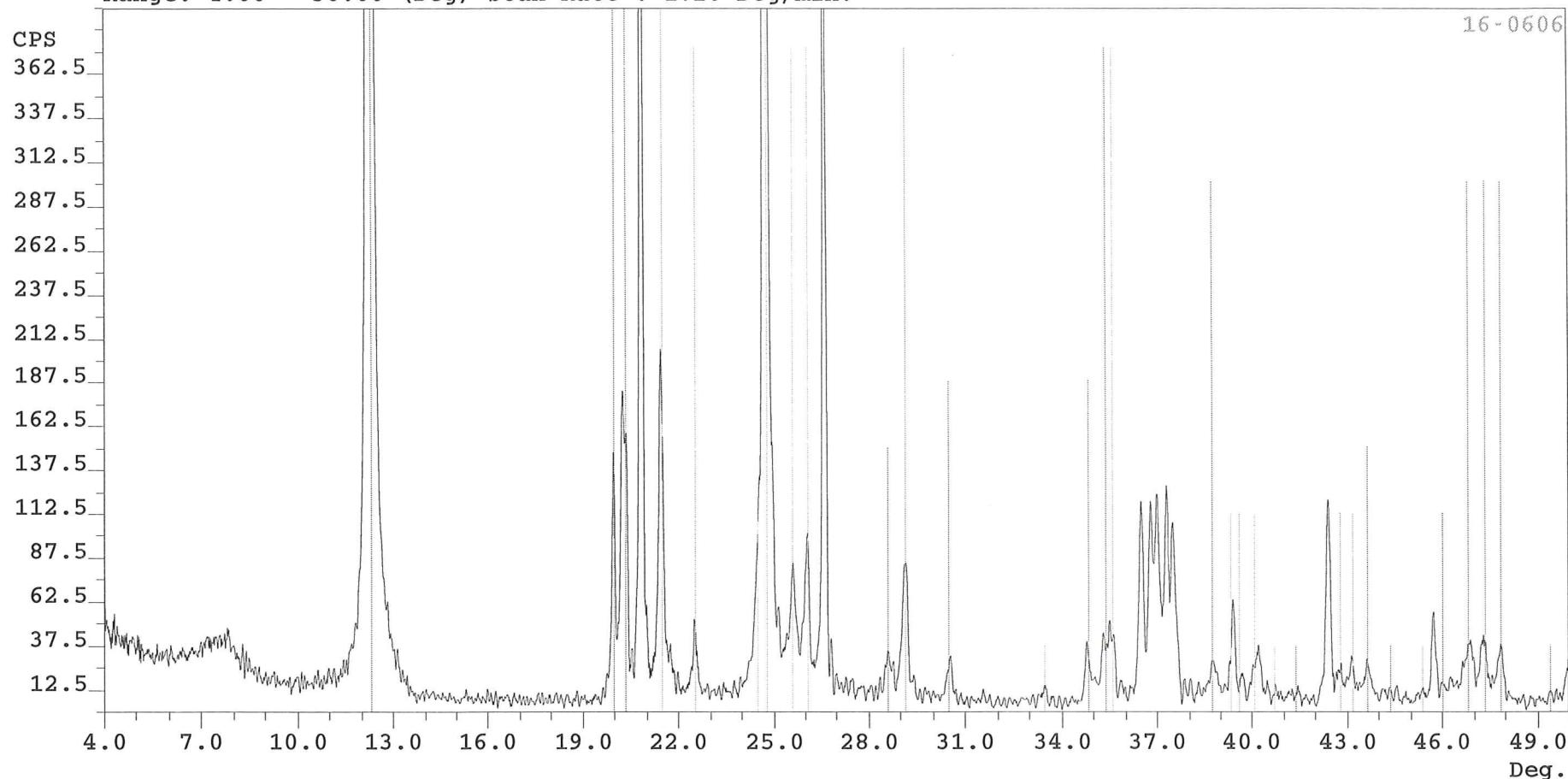
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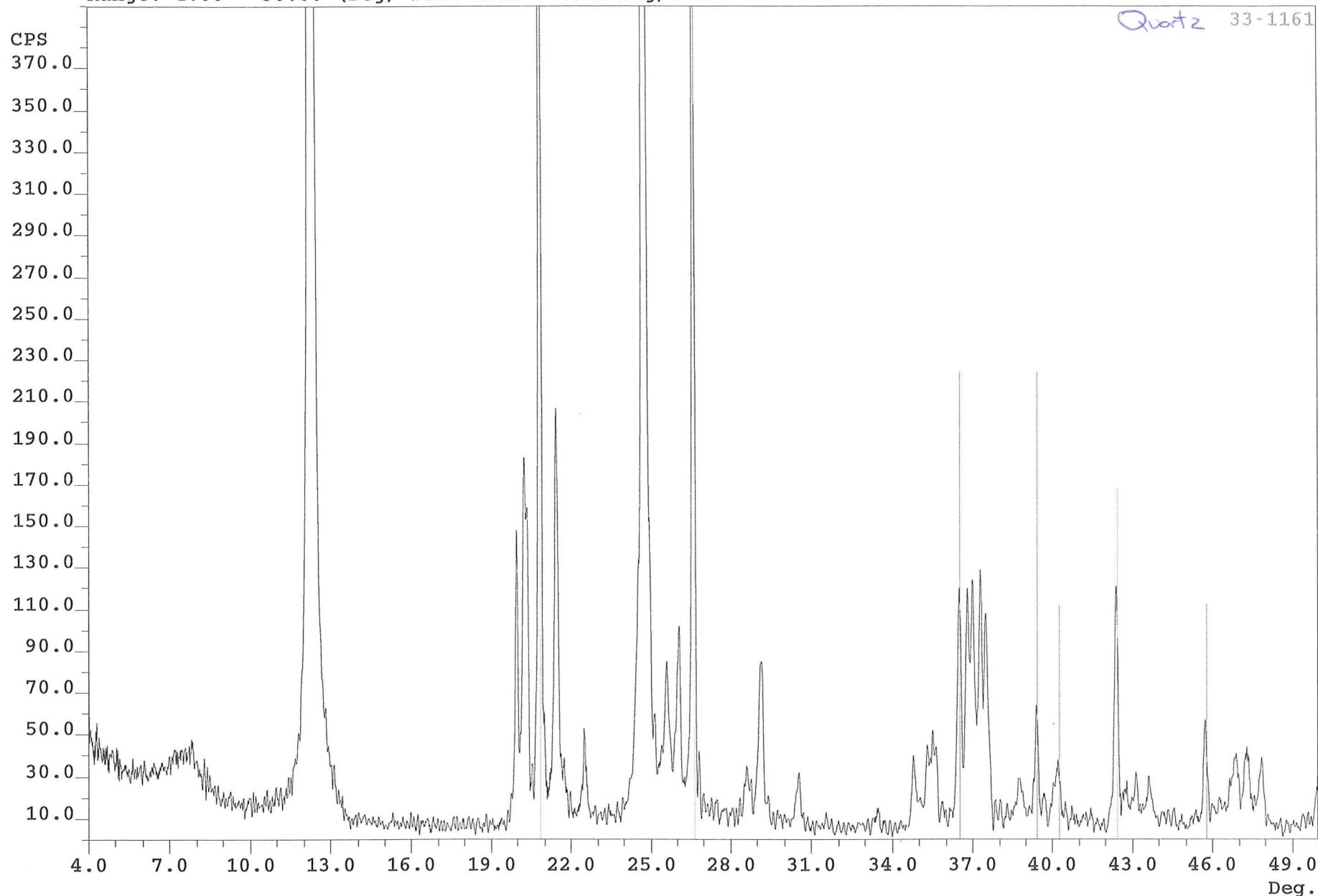
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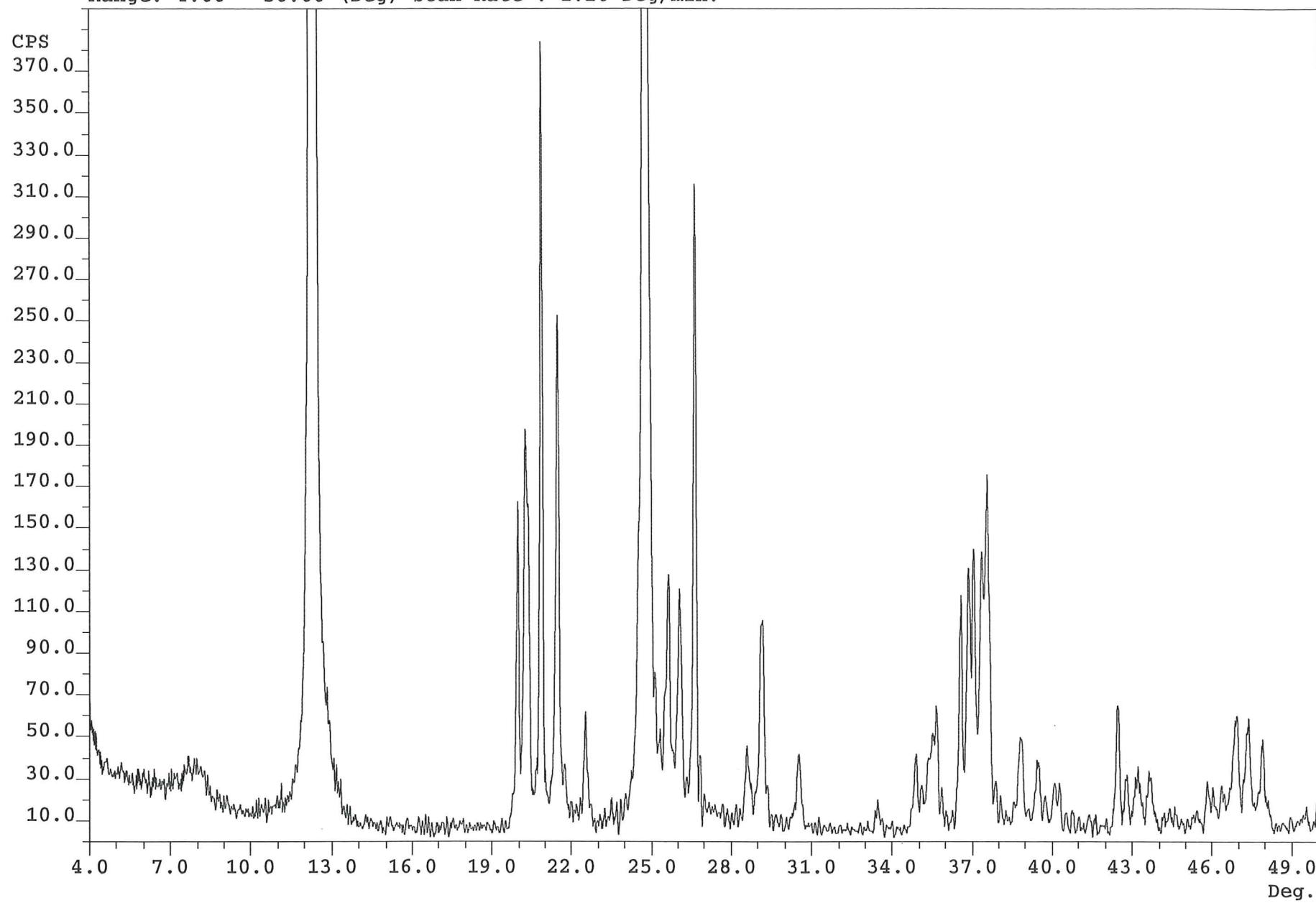
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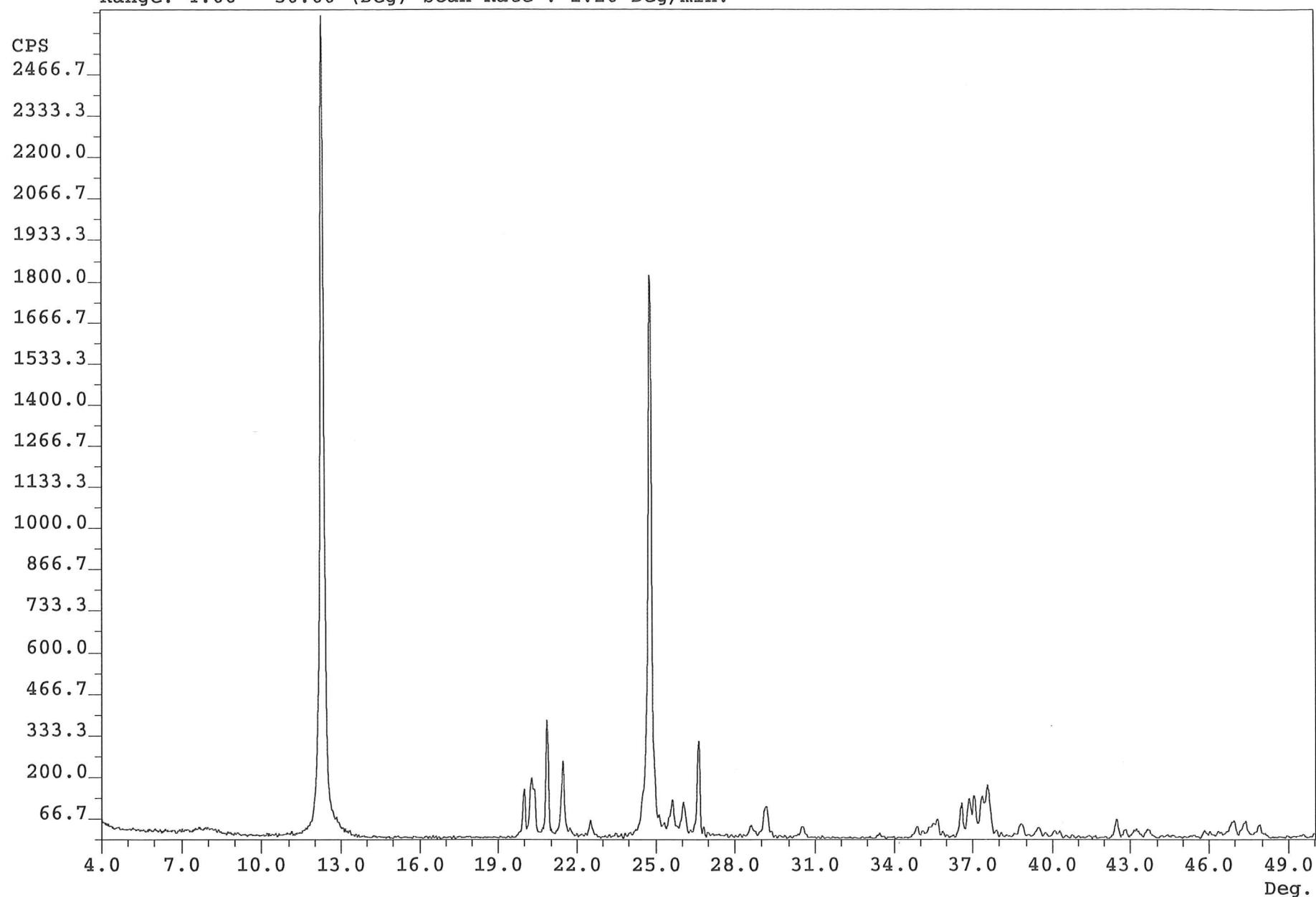
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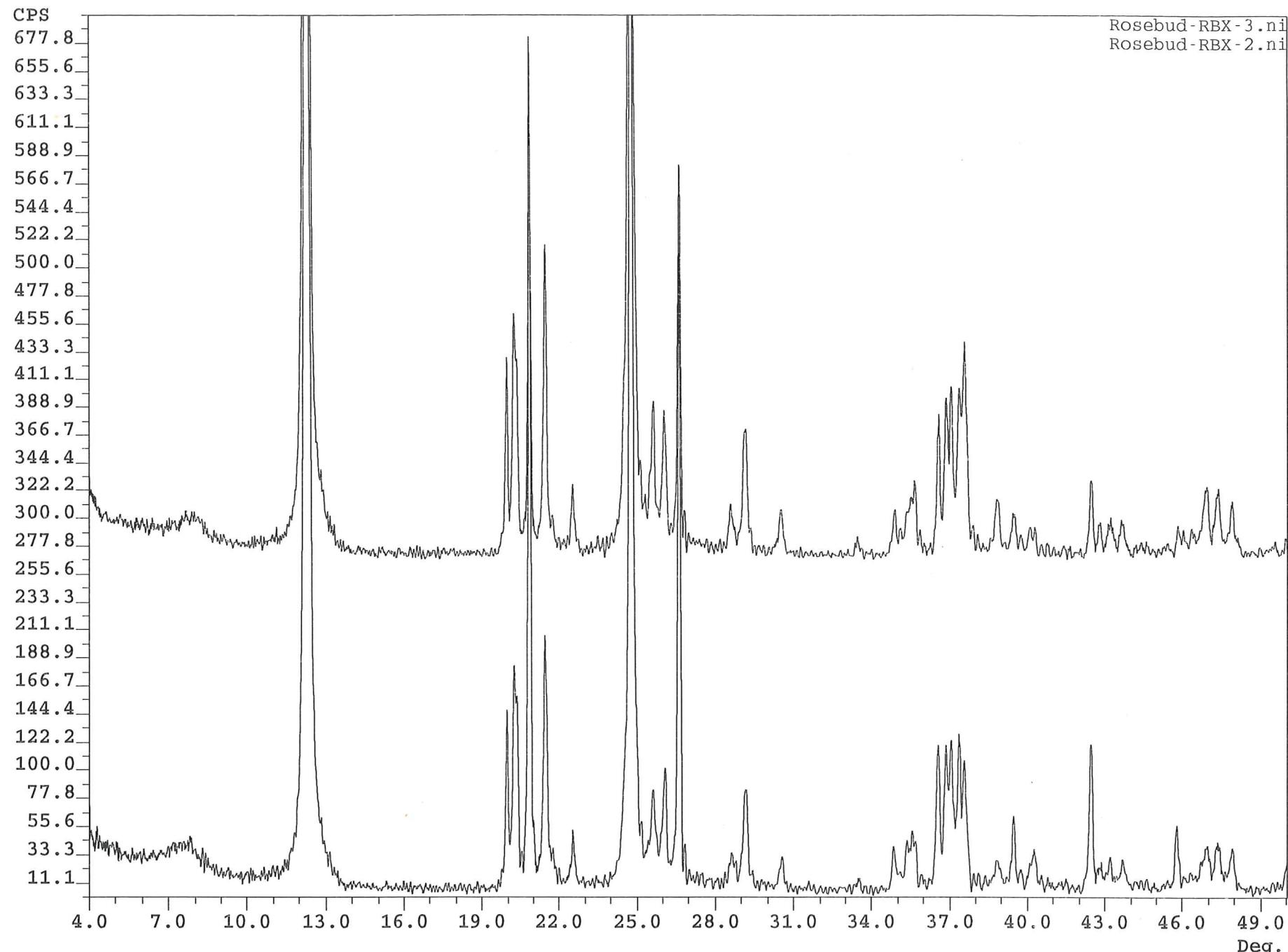


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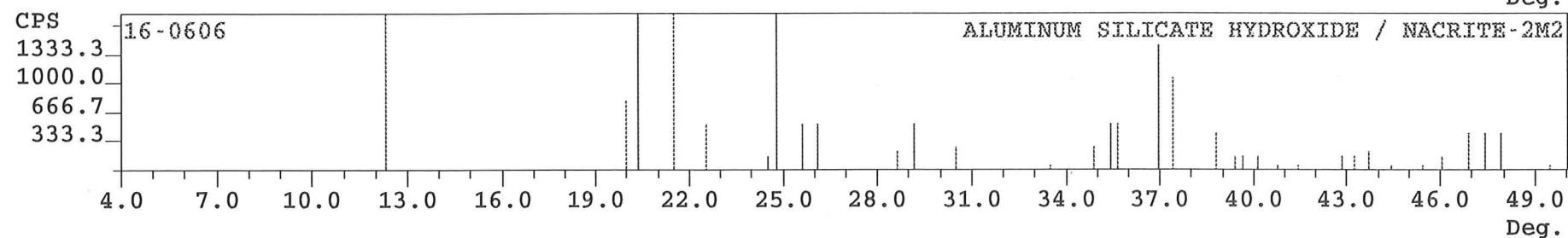
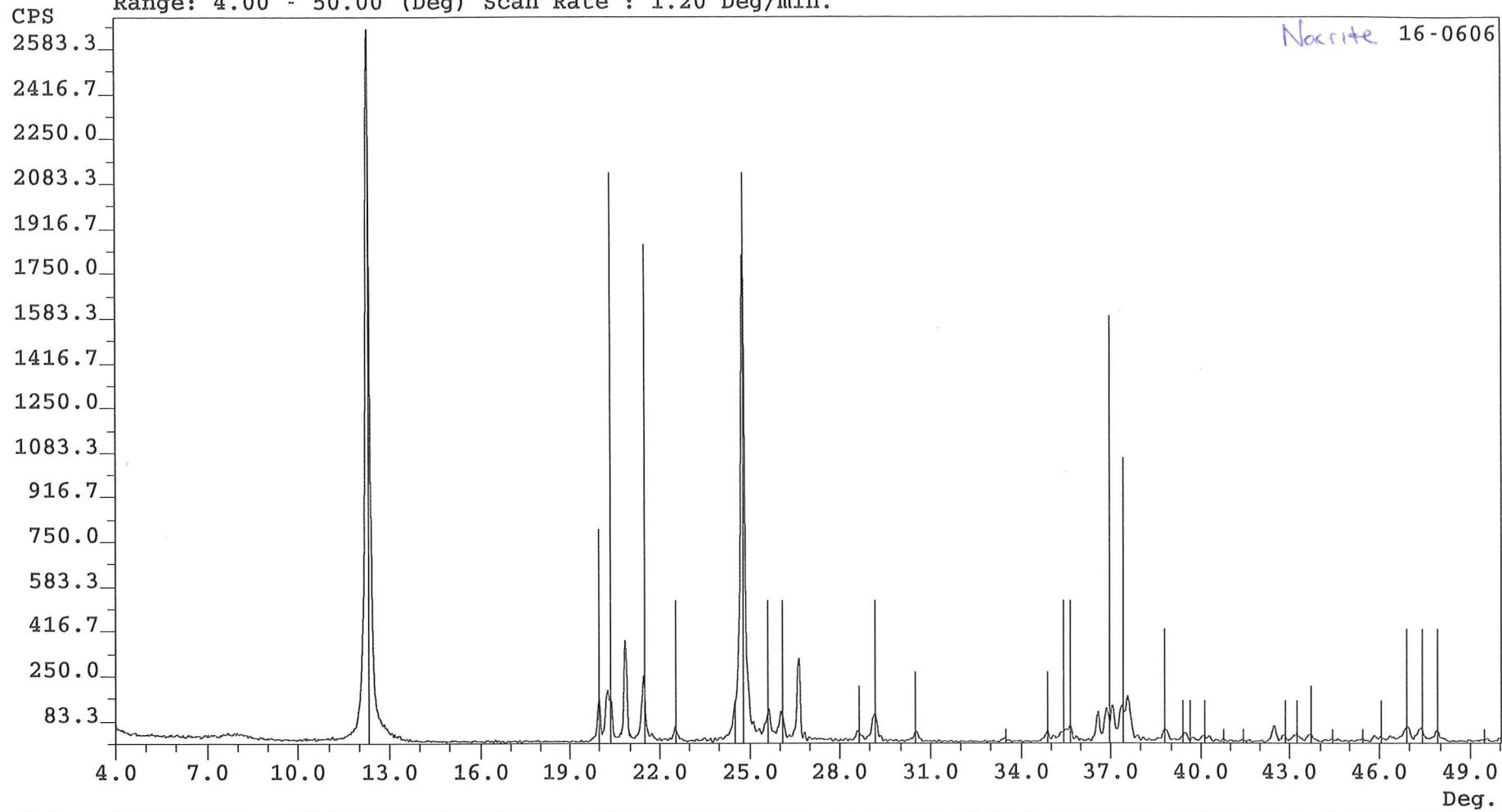


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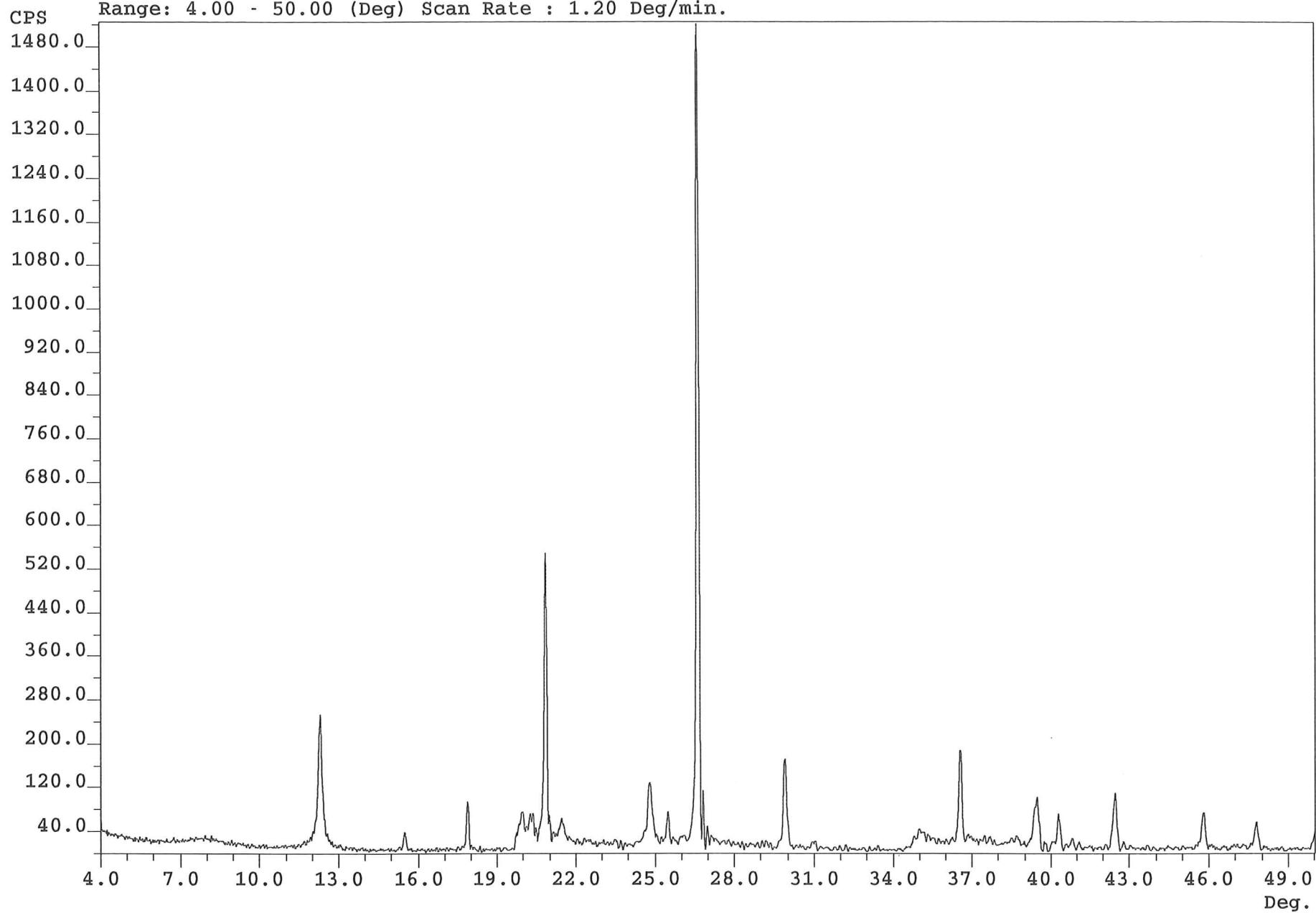




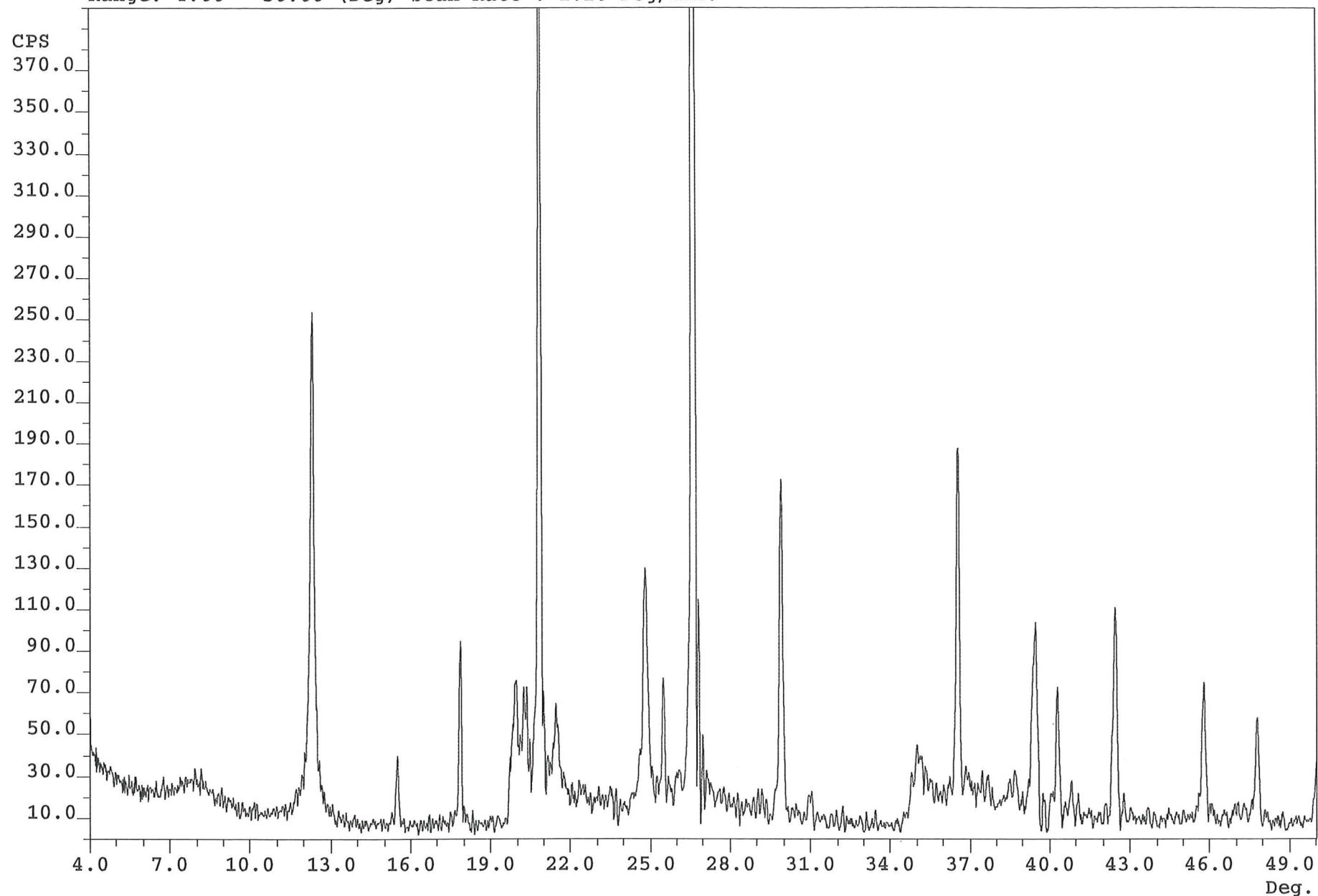
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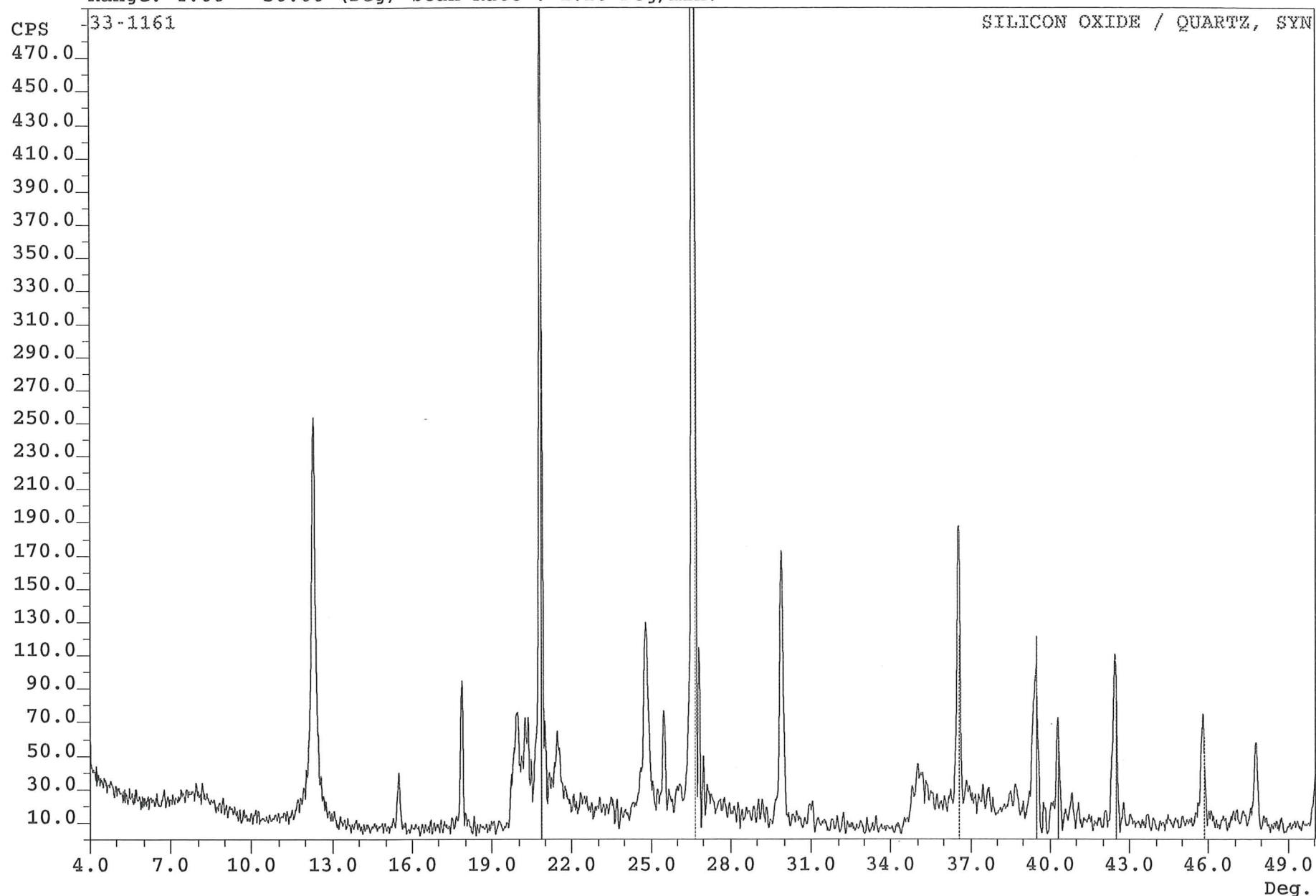
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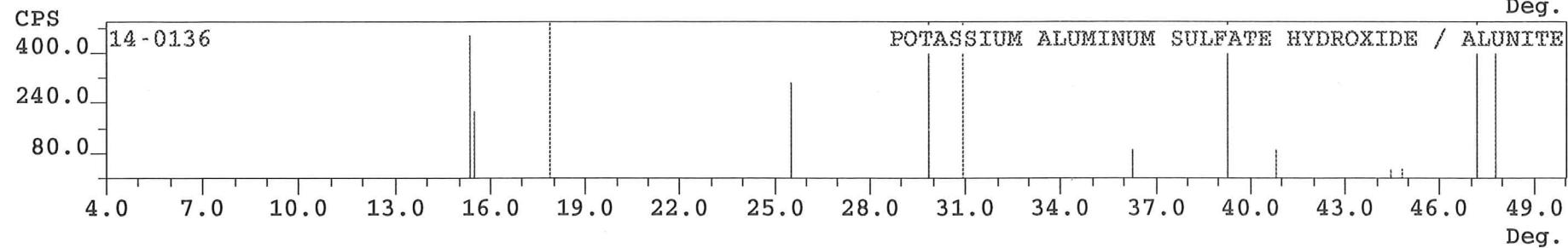
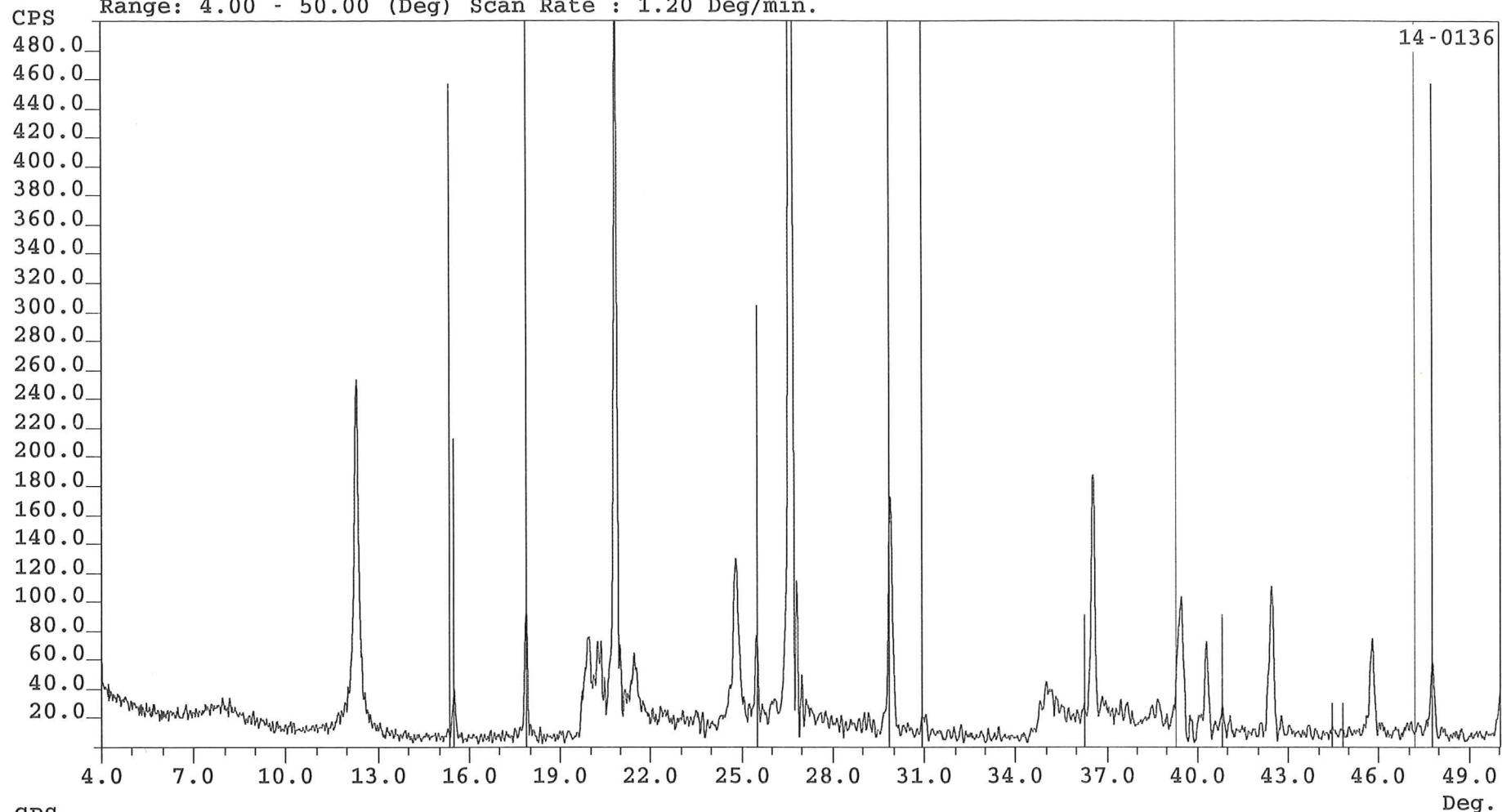
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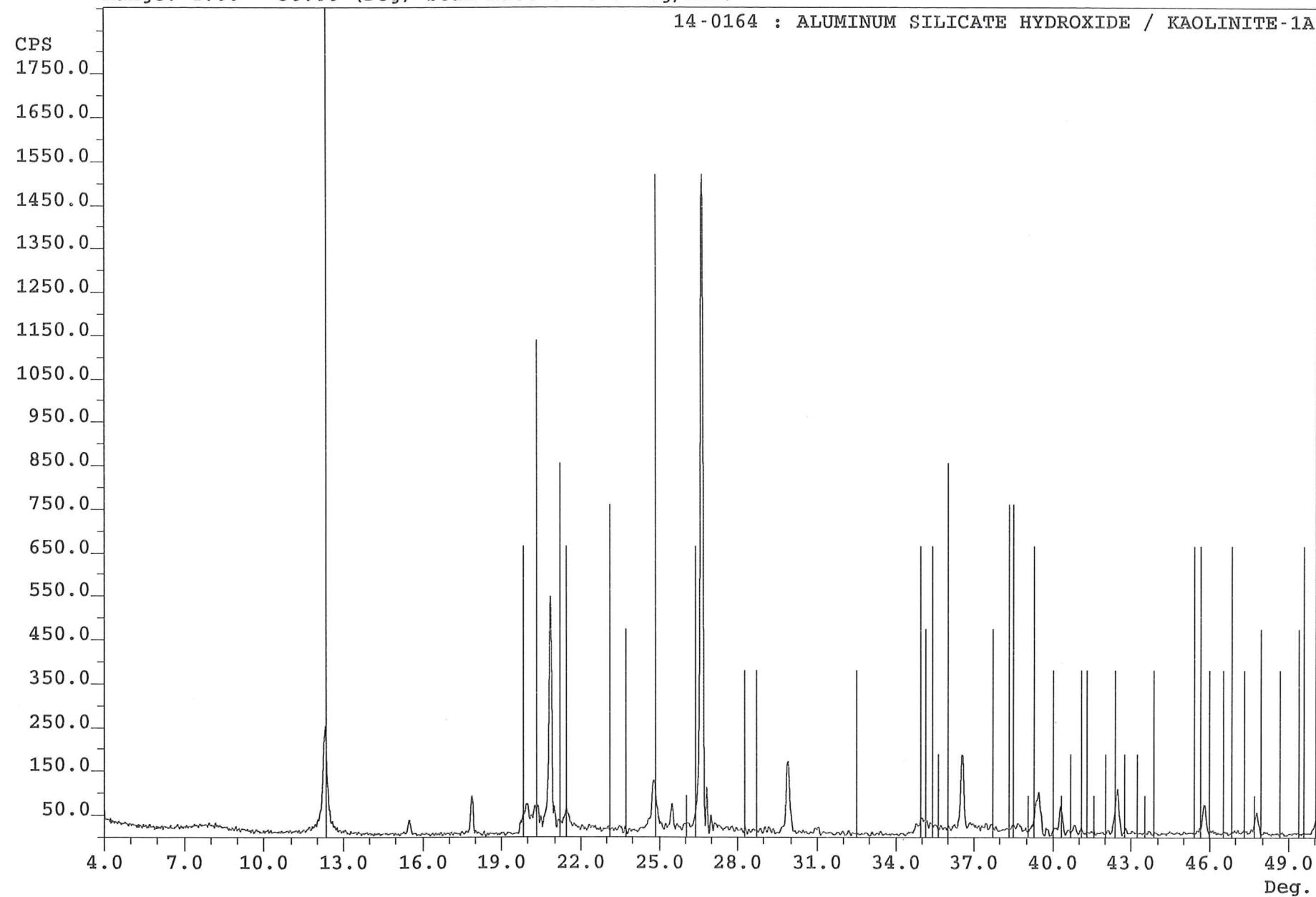
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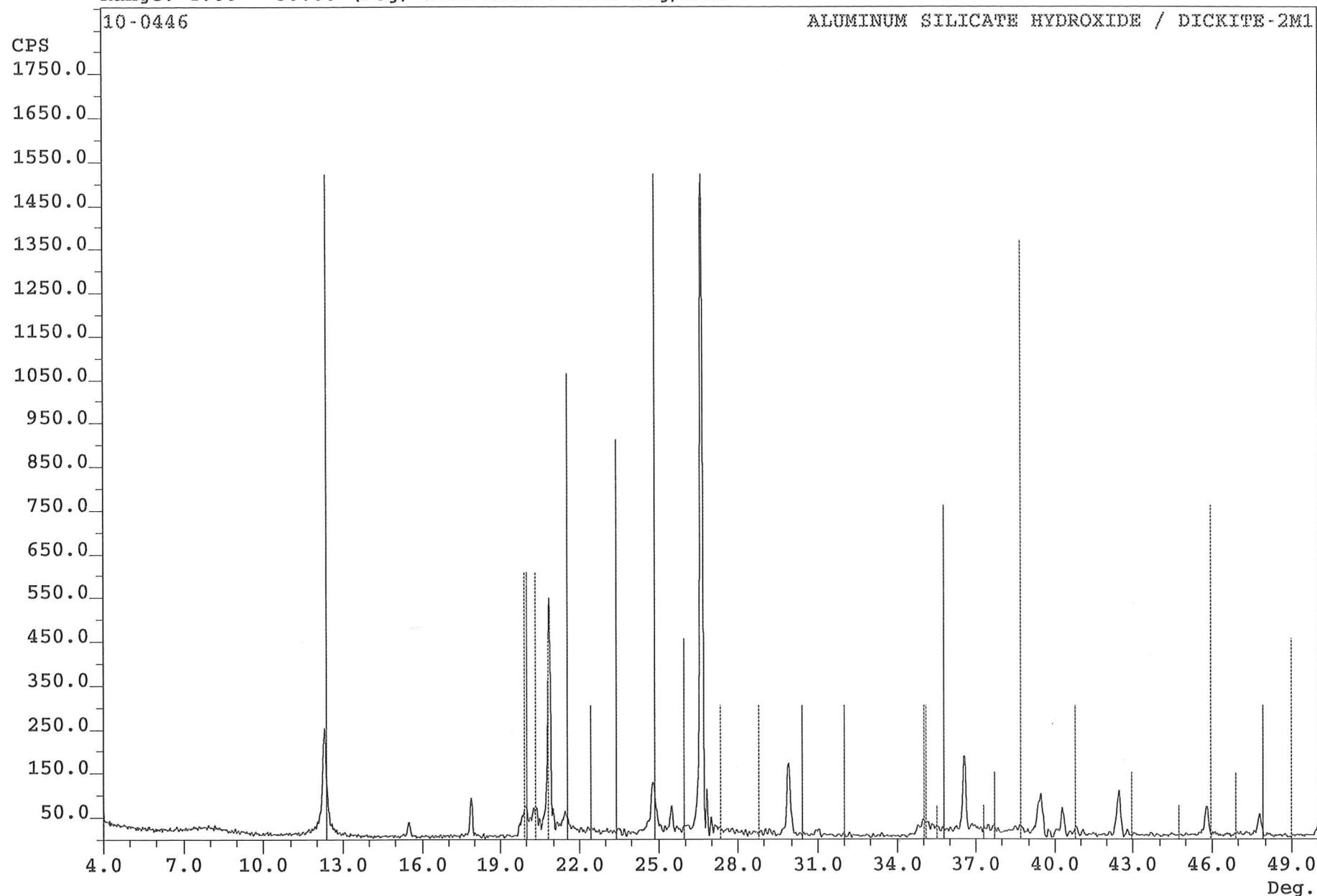
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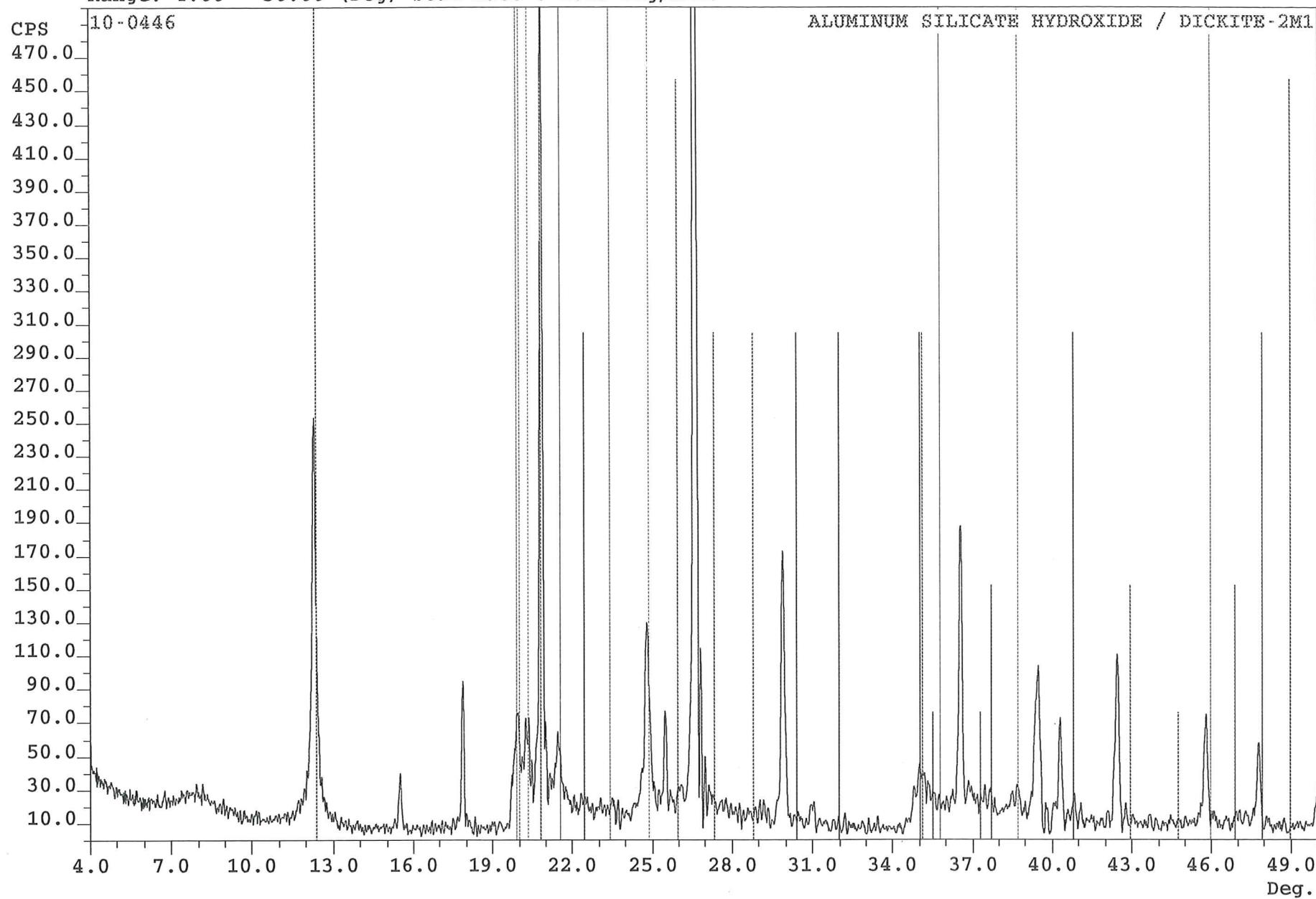
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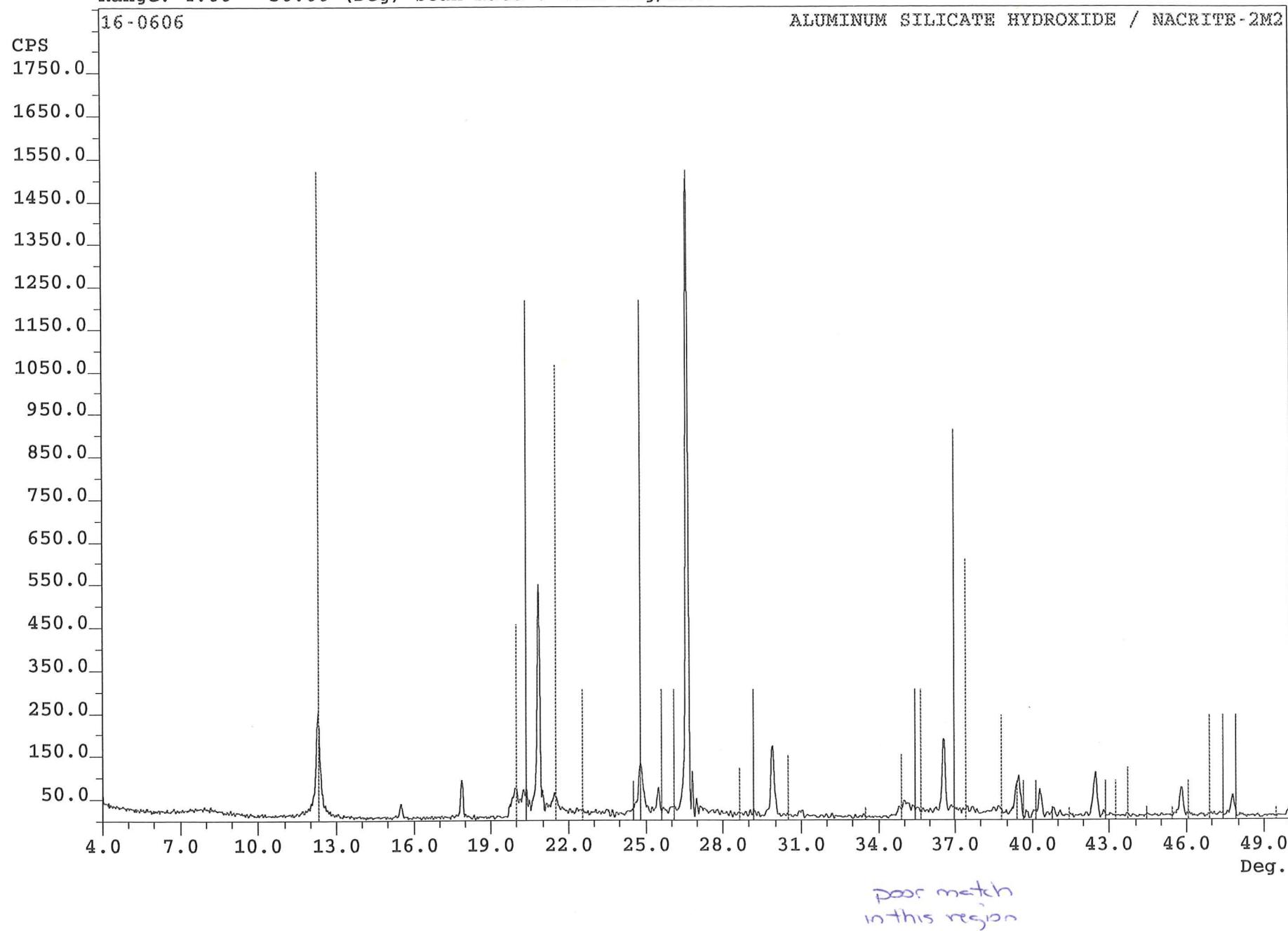
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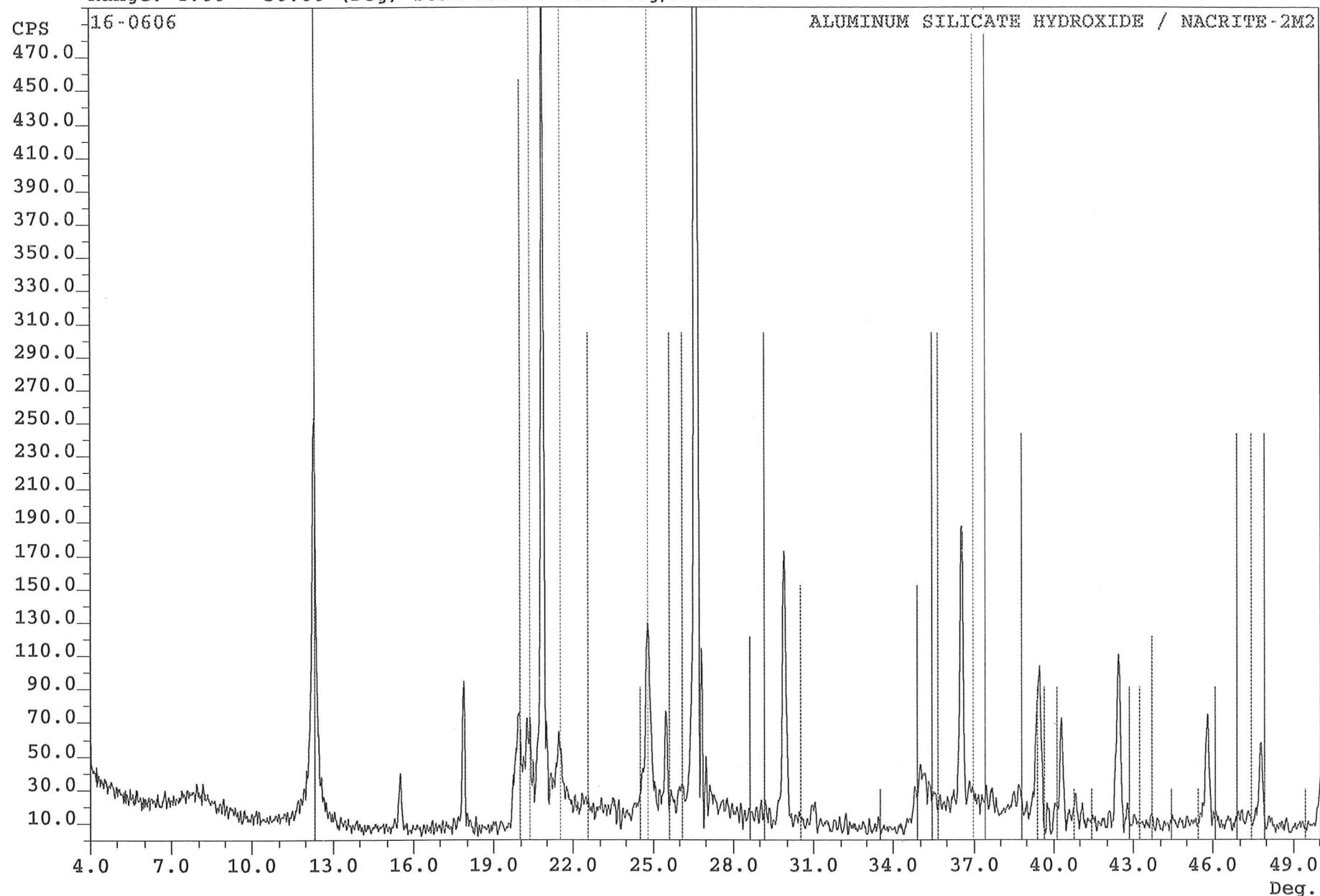
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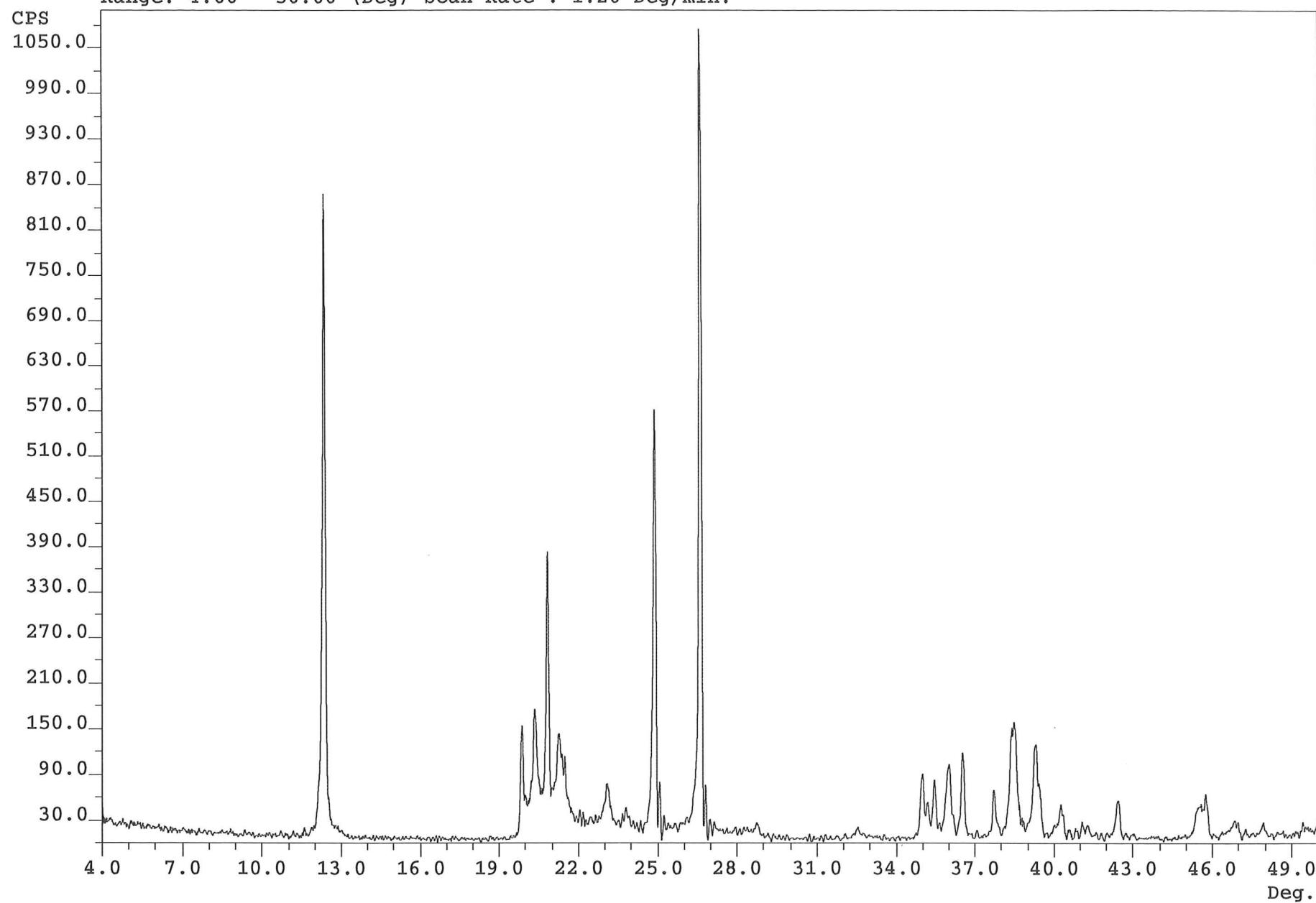
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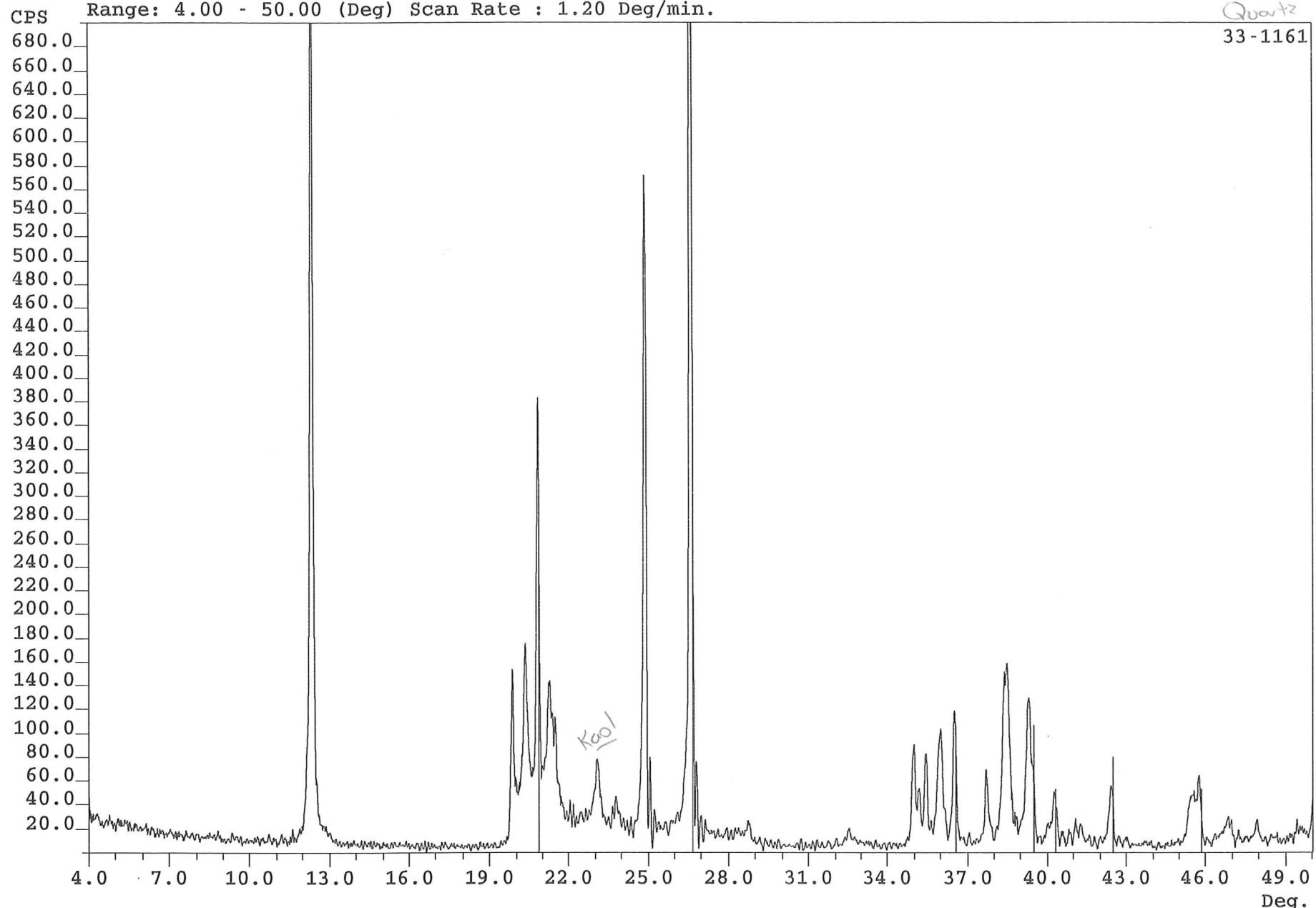
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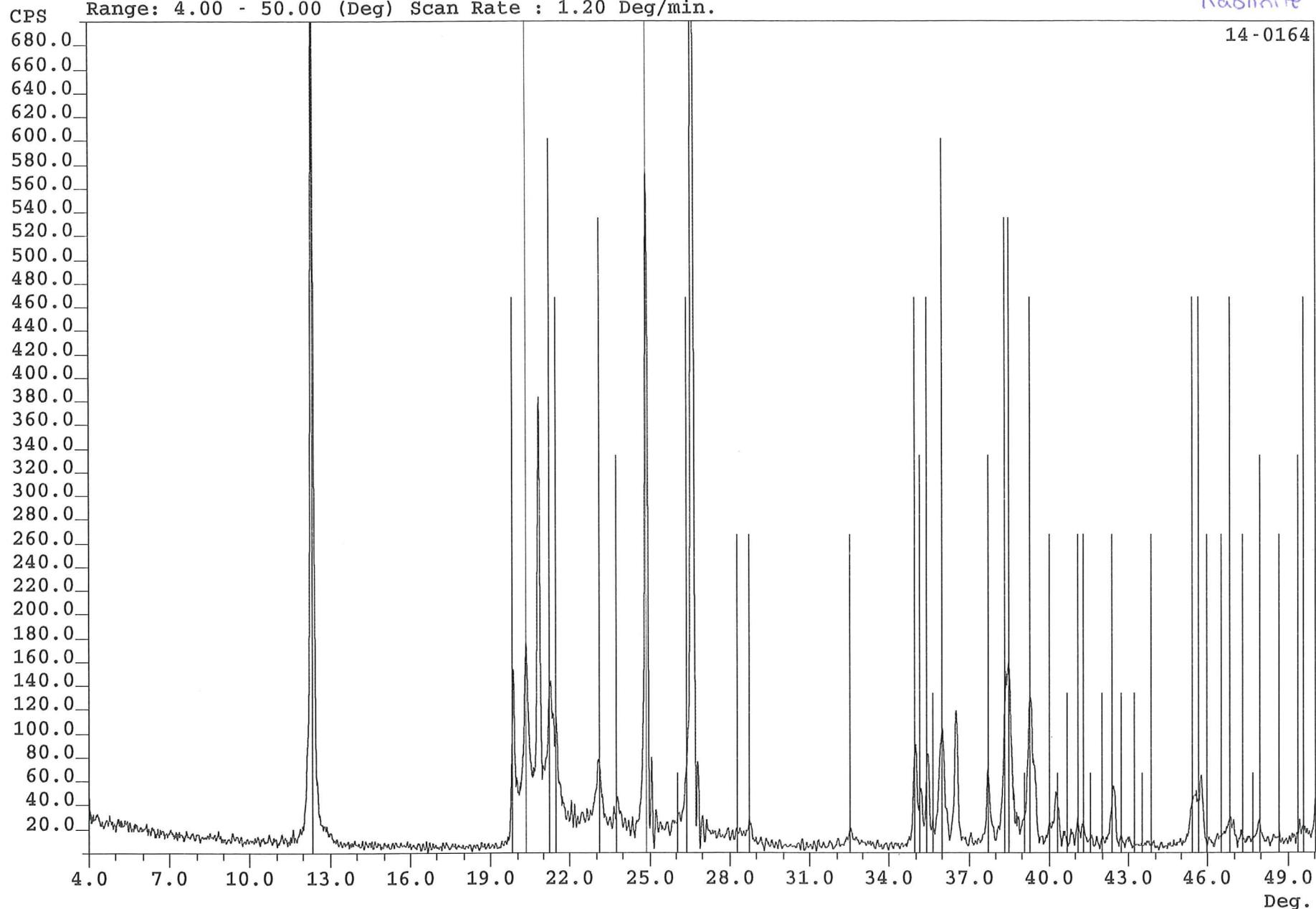


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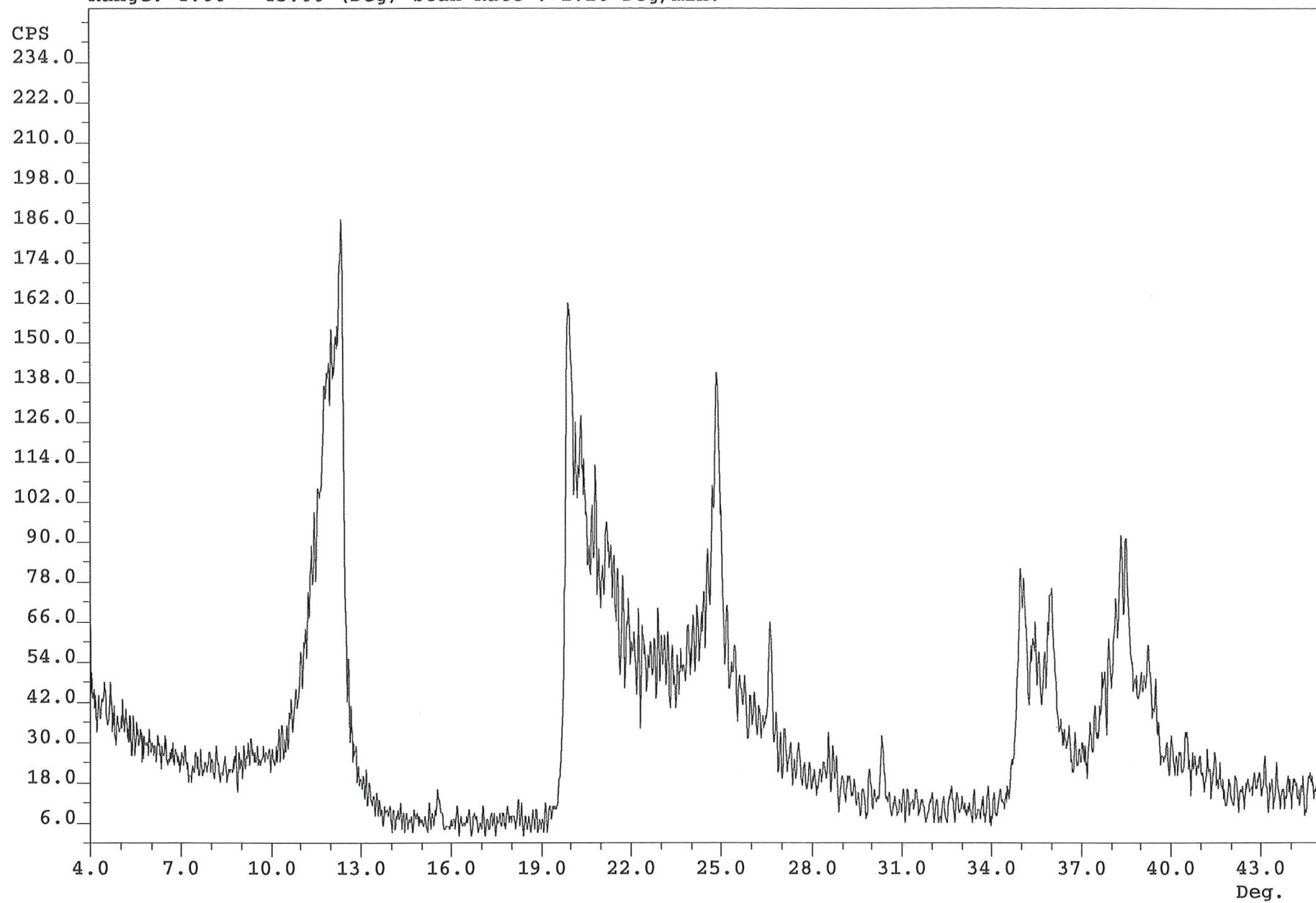


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Kaolinite

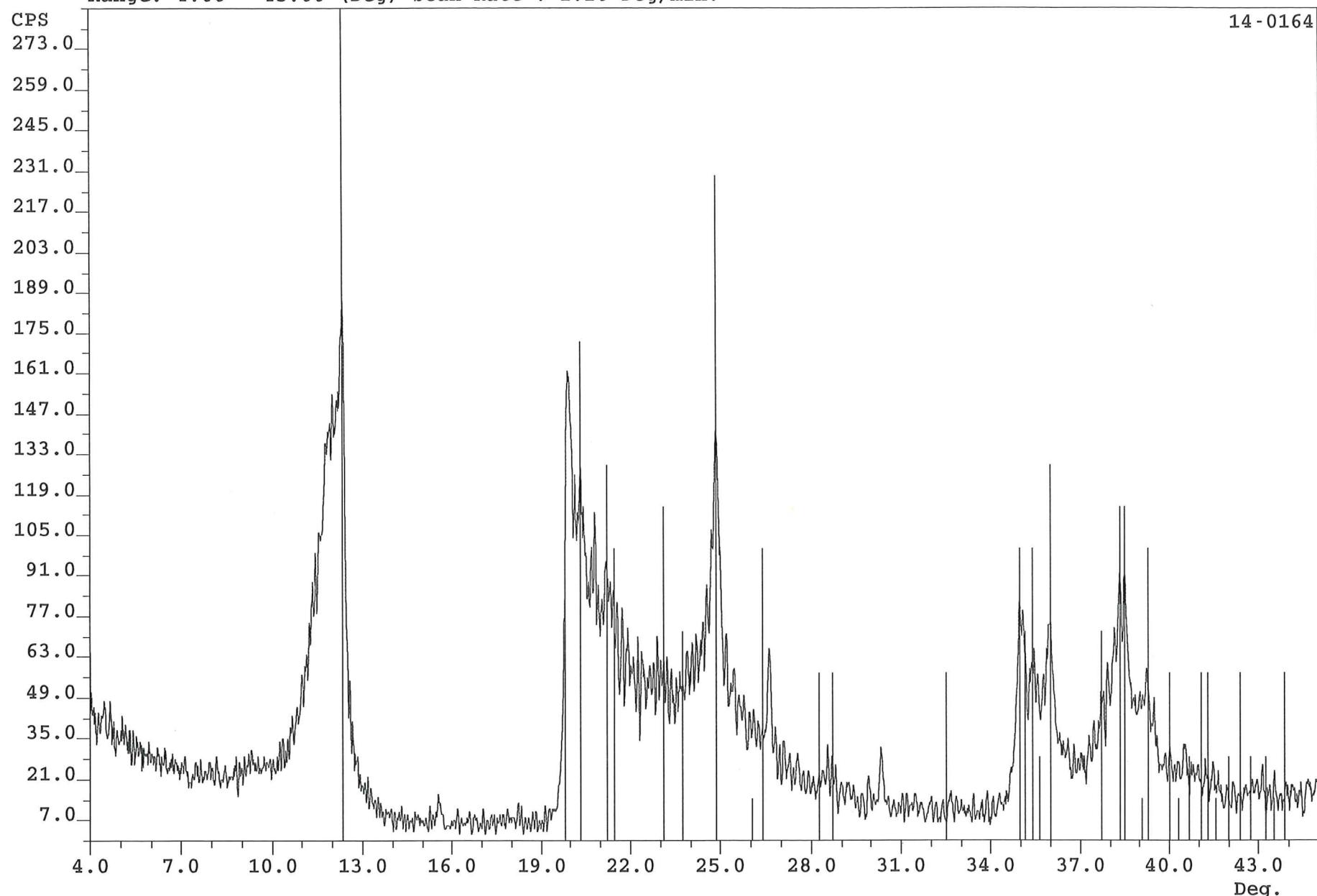


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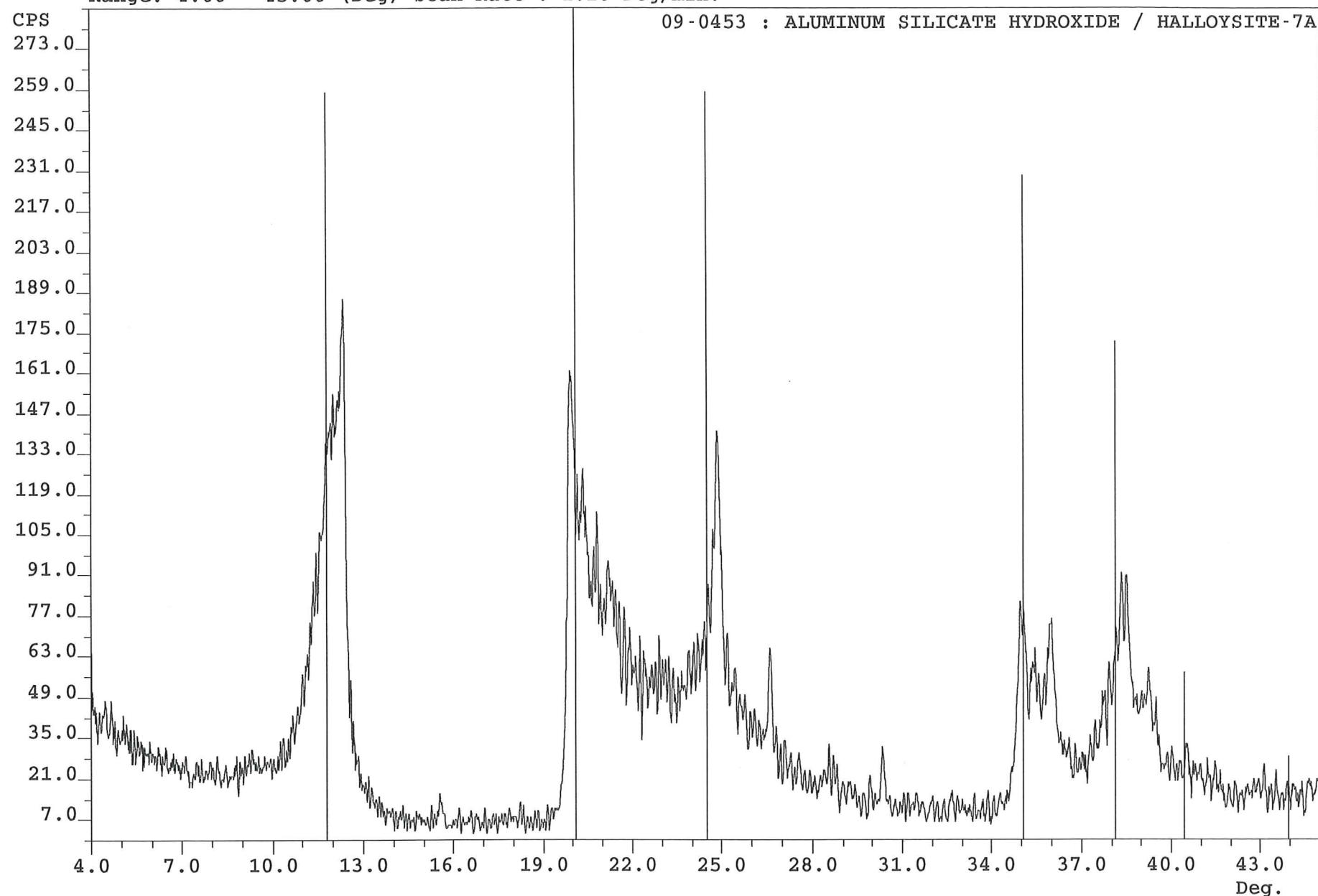


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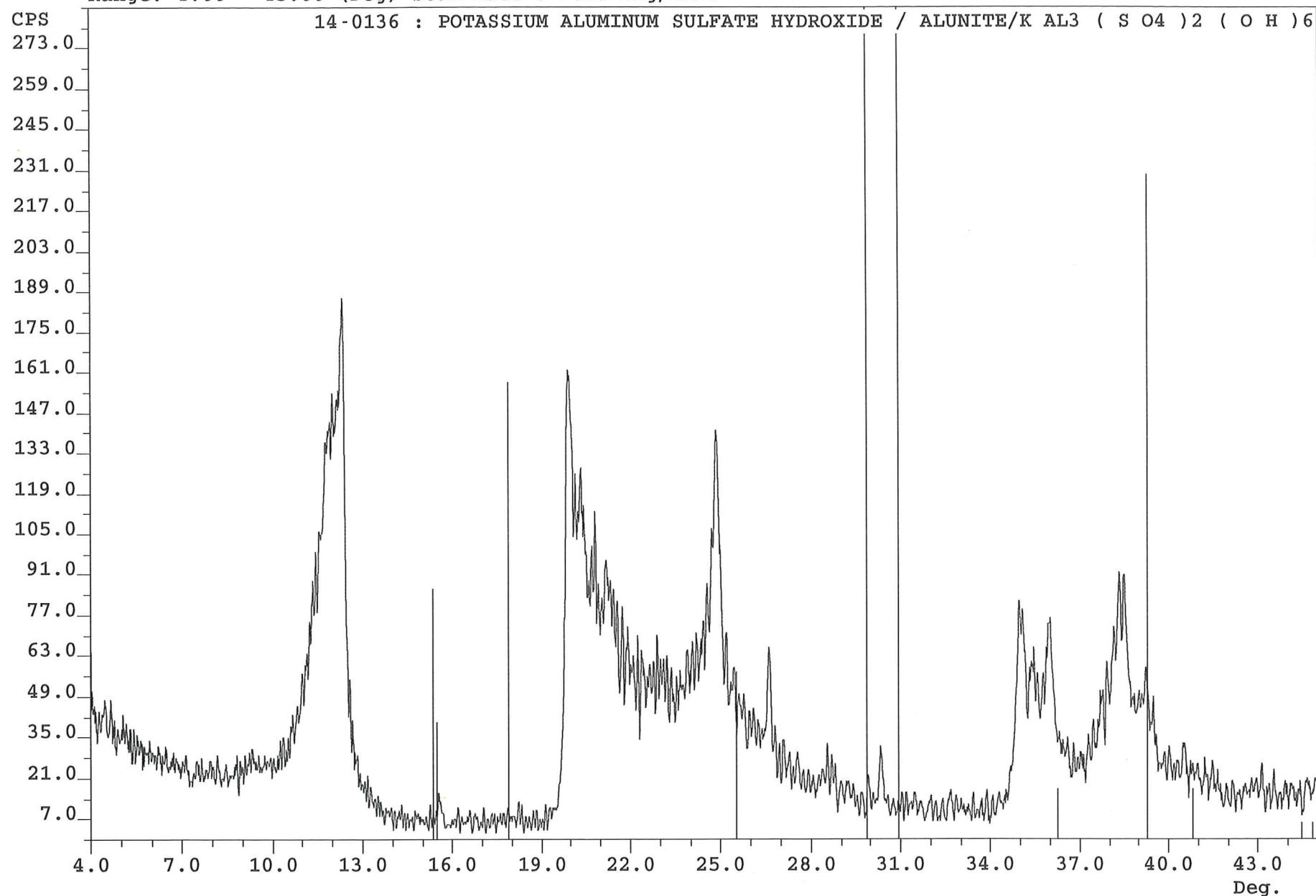
Kaolinite

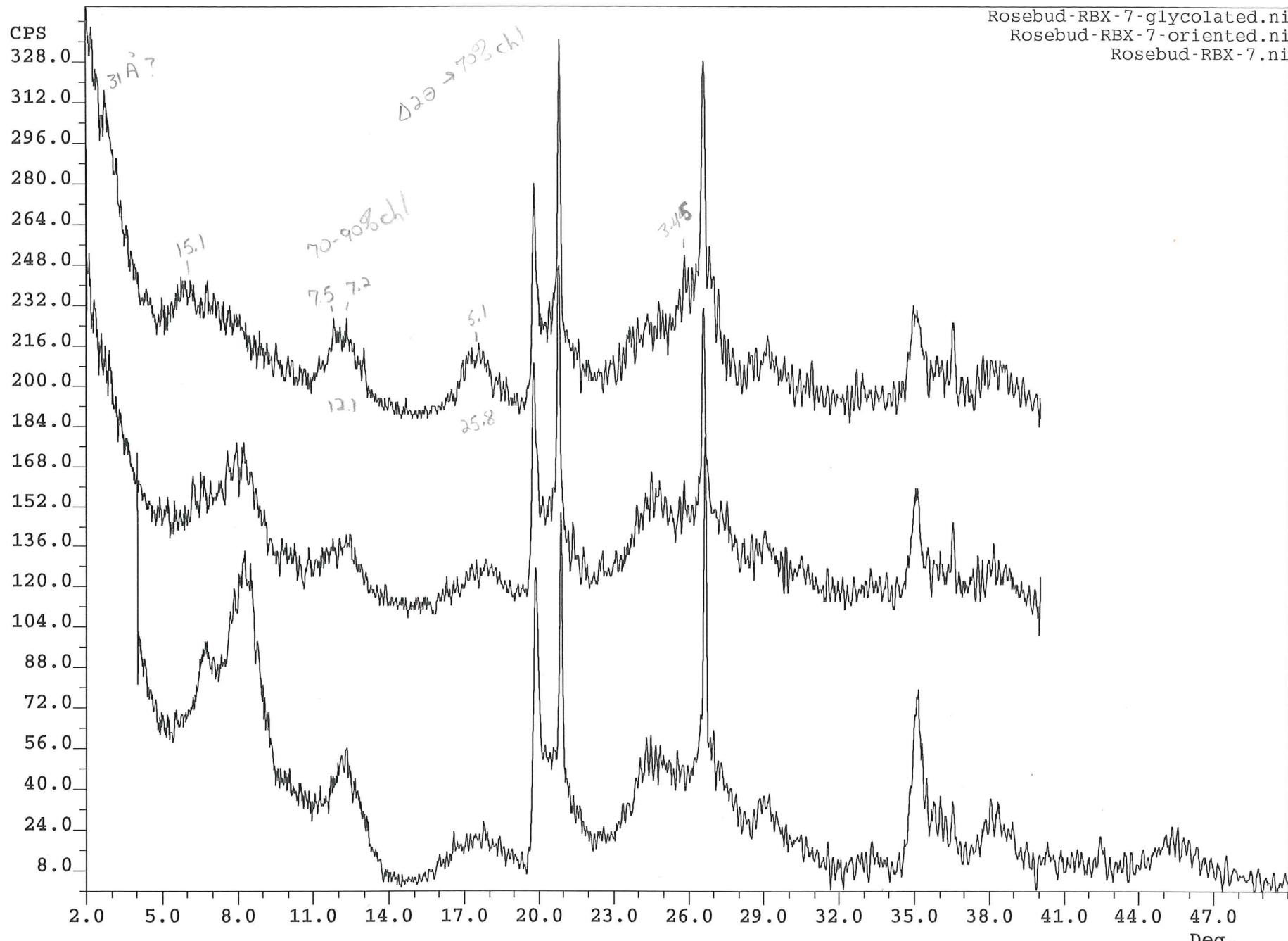


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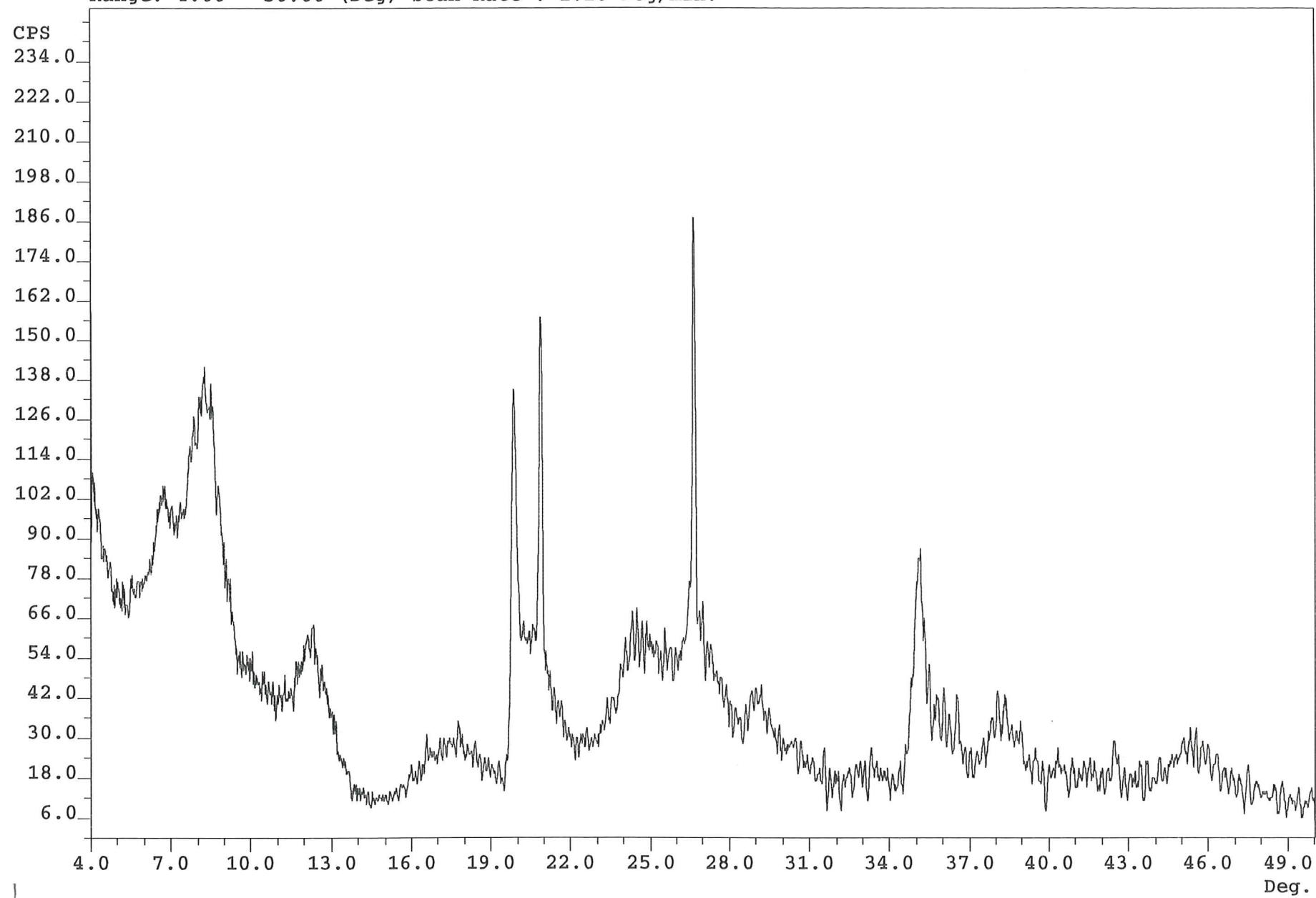
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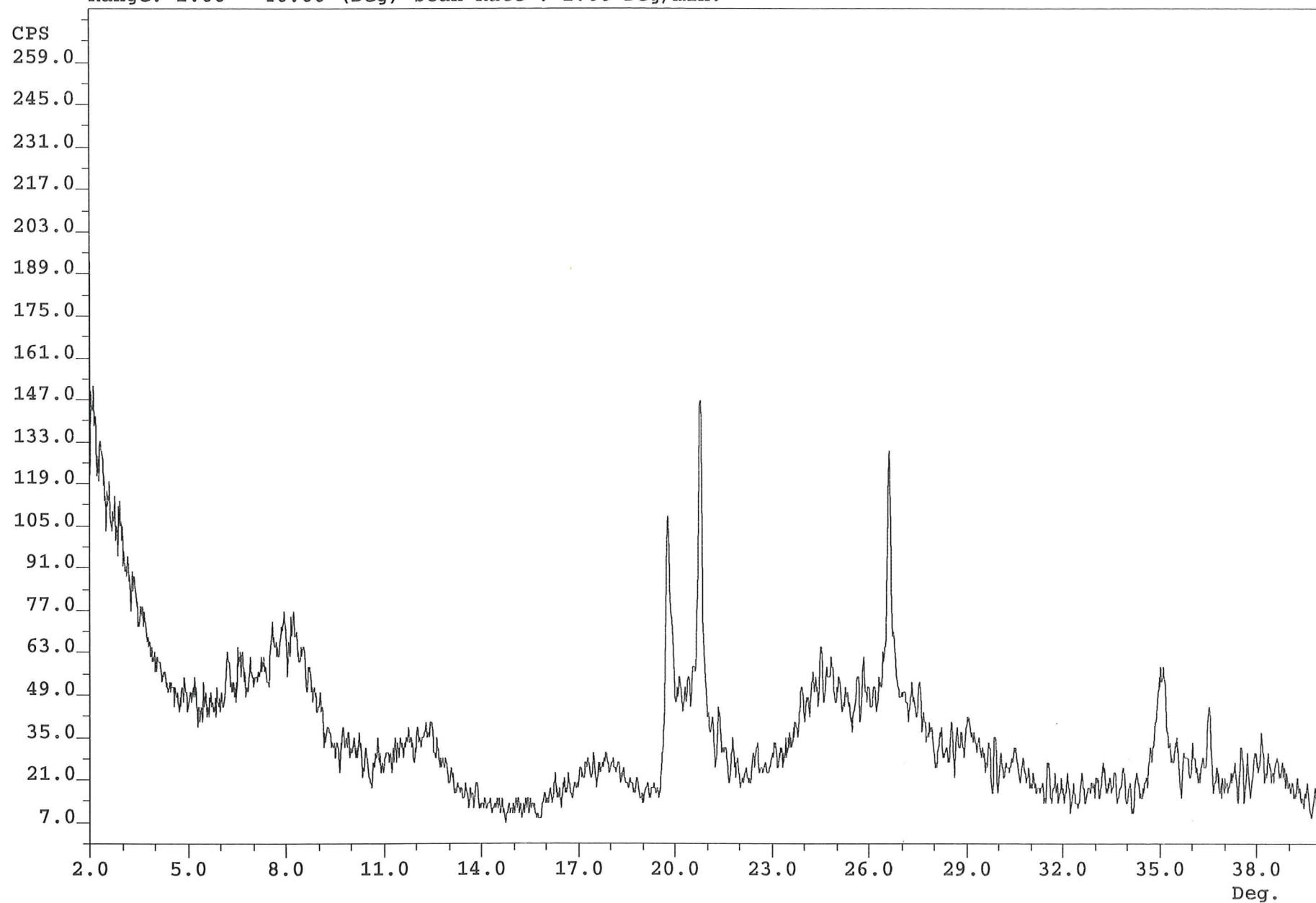


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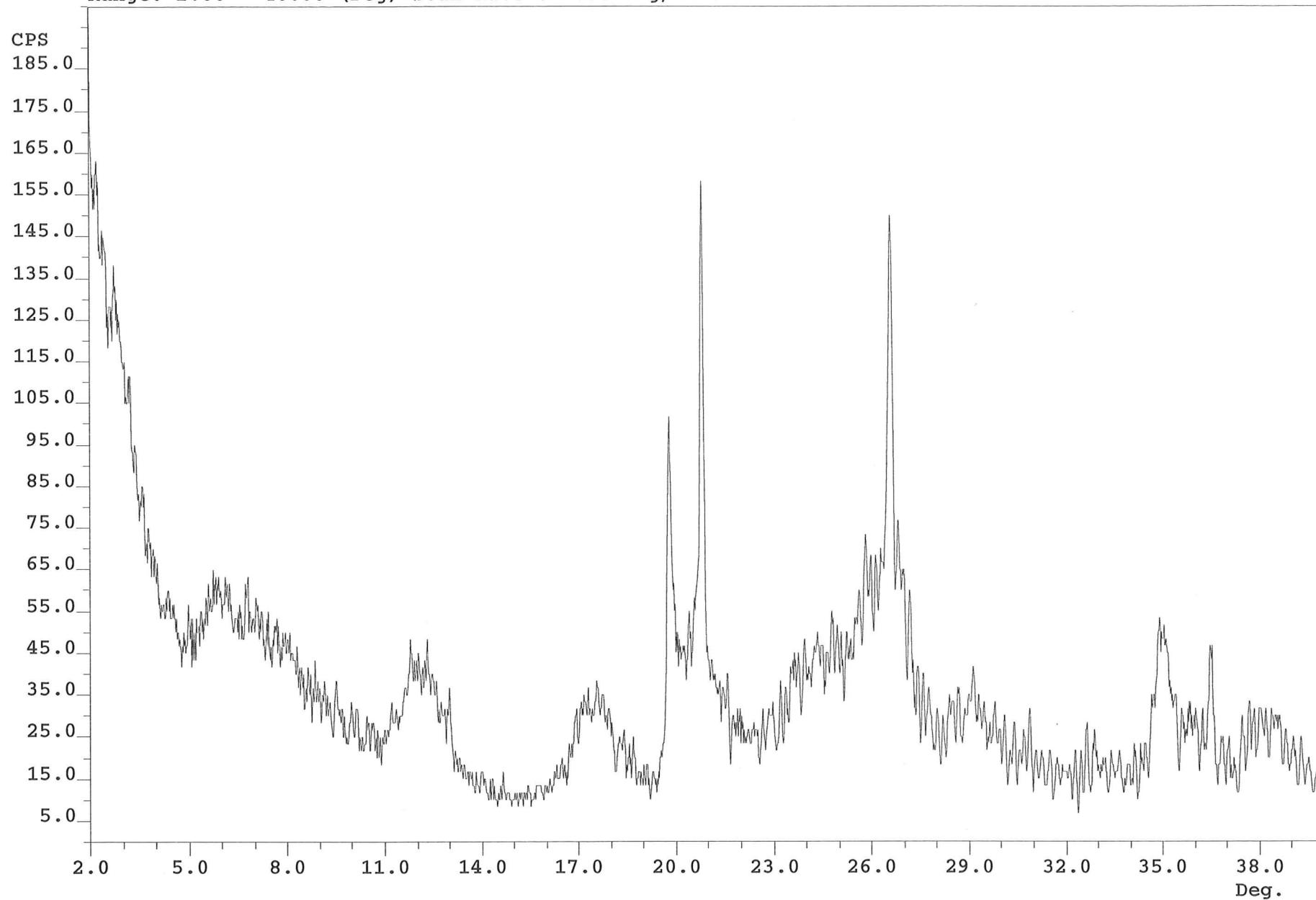
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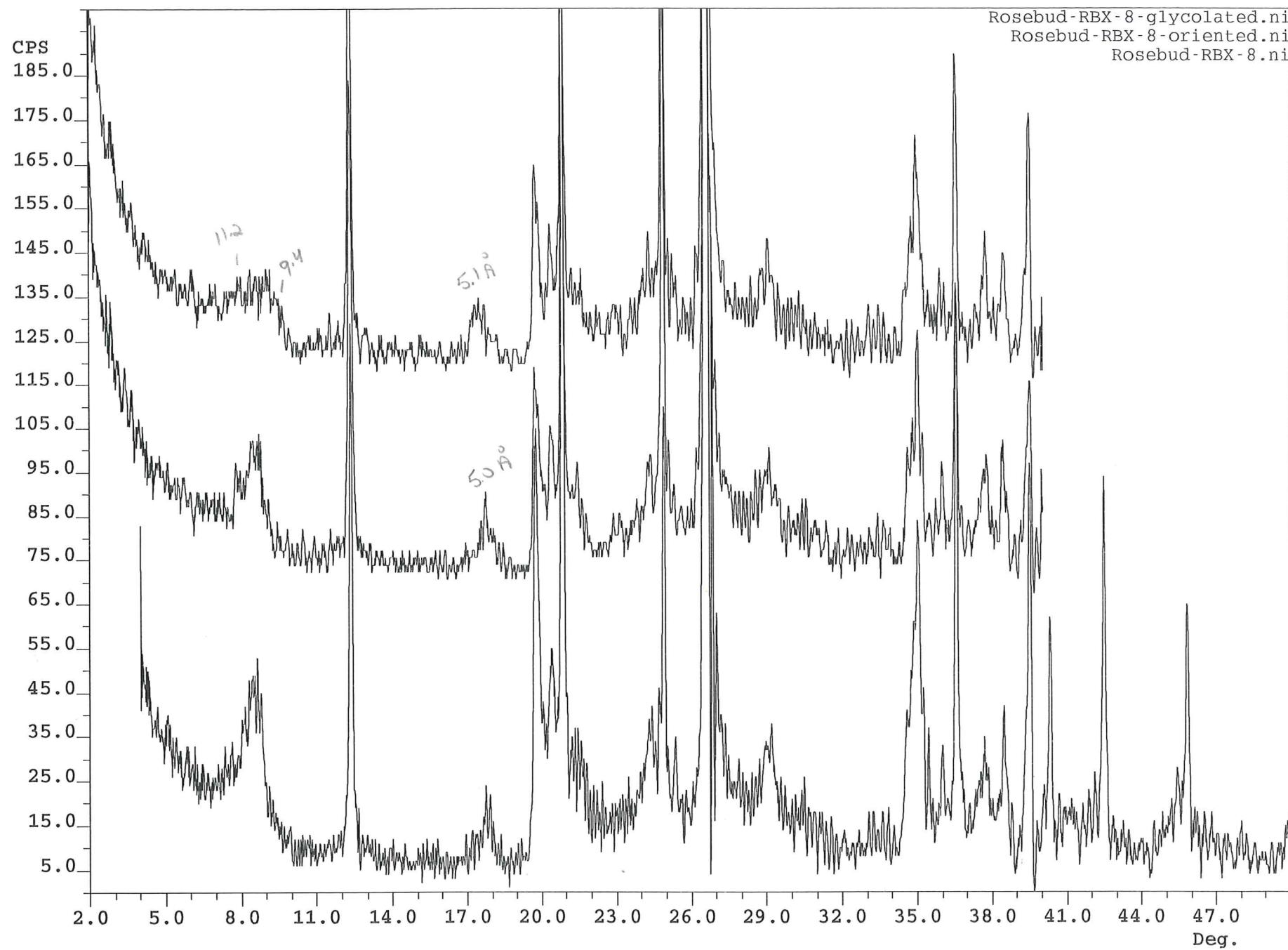


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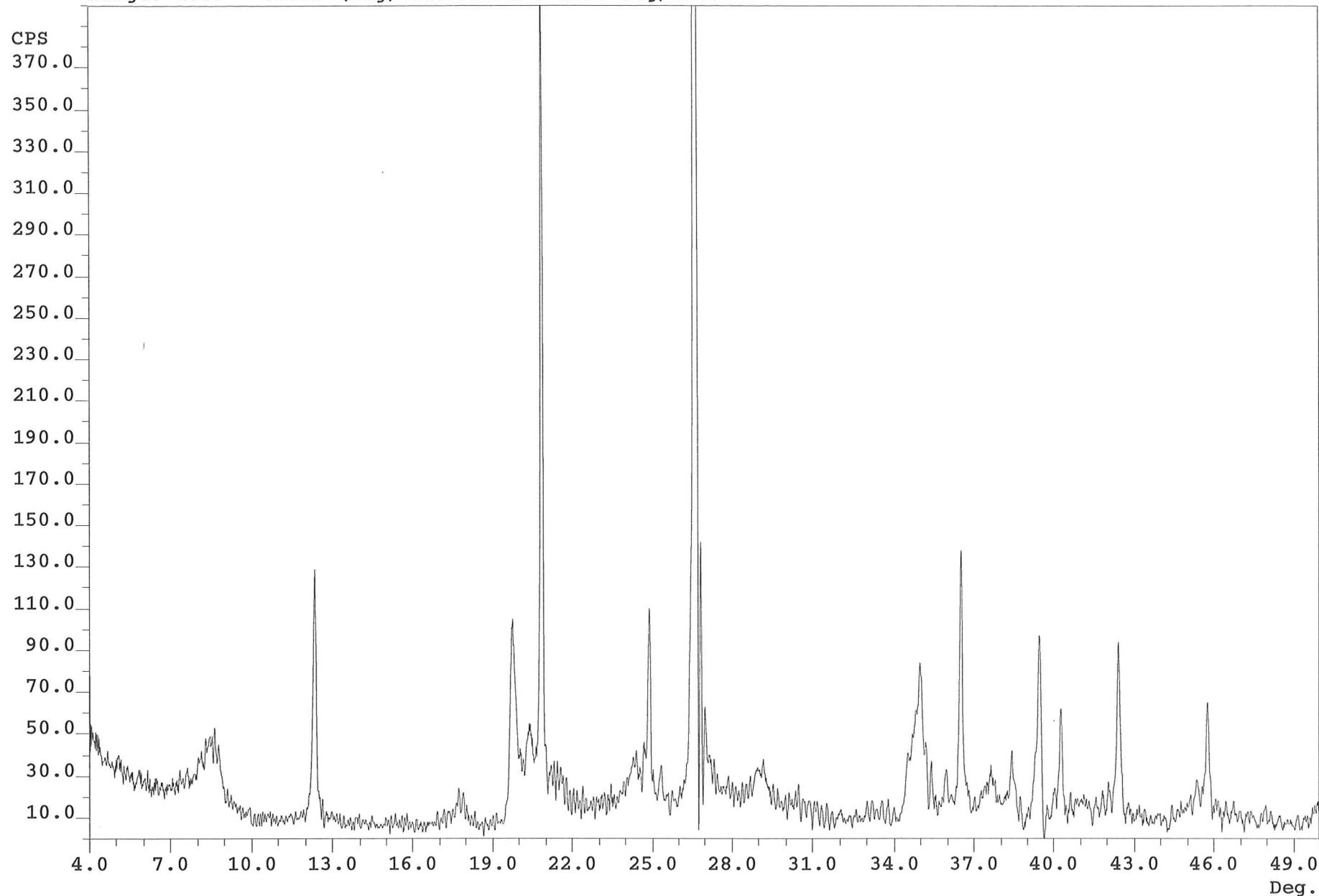


File: Rosebud-RBX-7-glycolated, ID: 65949 (Pima=illite)-glyc.
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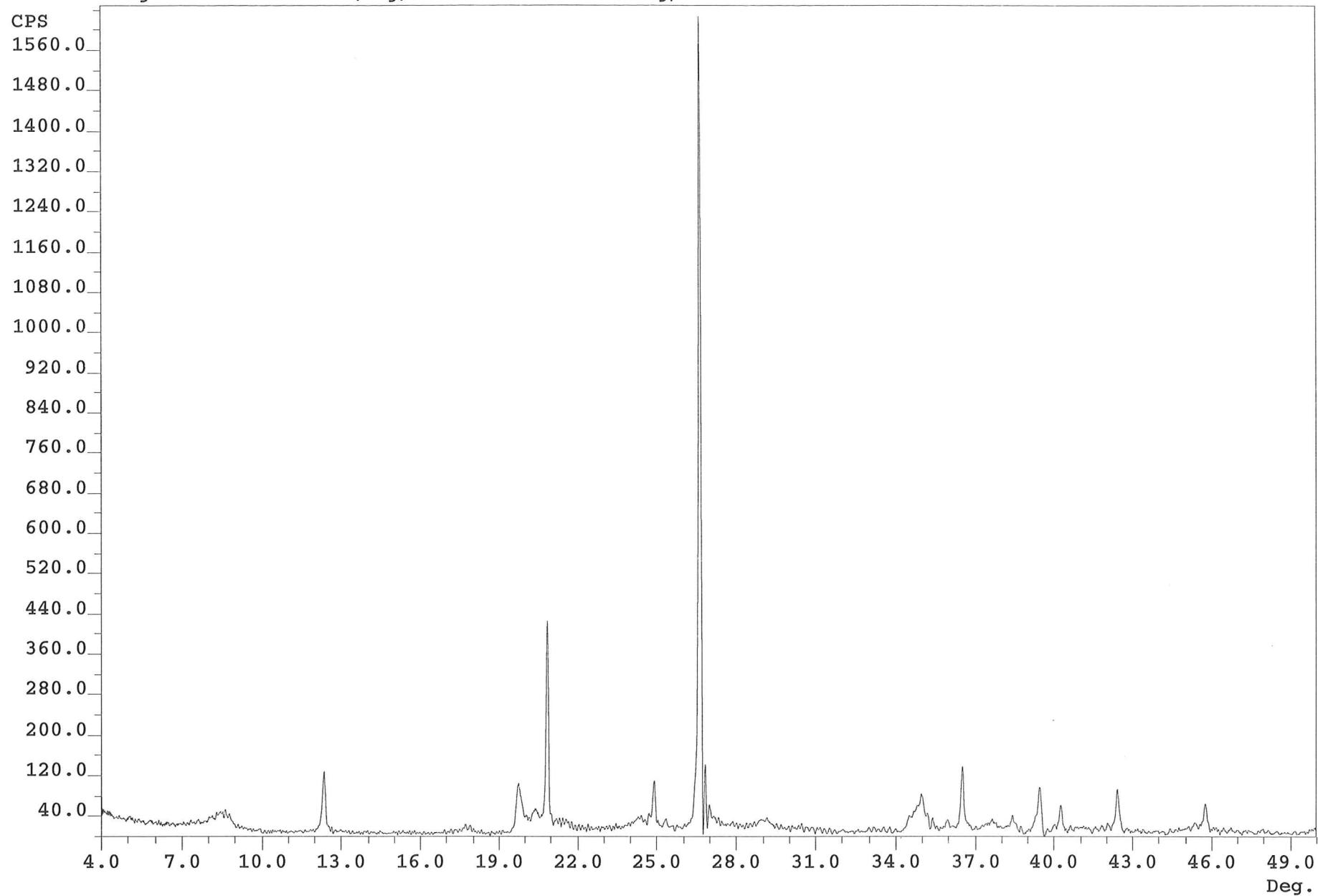




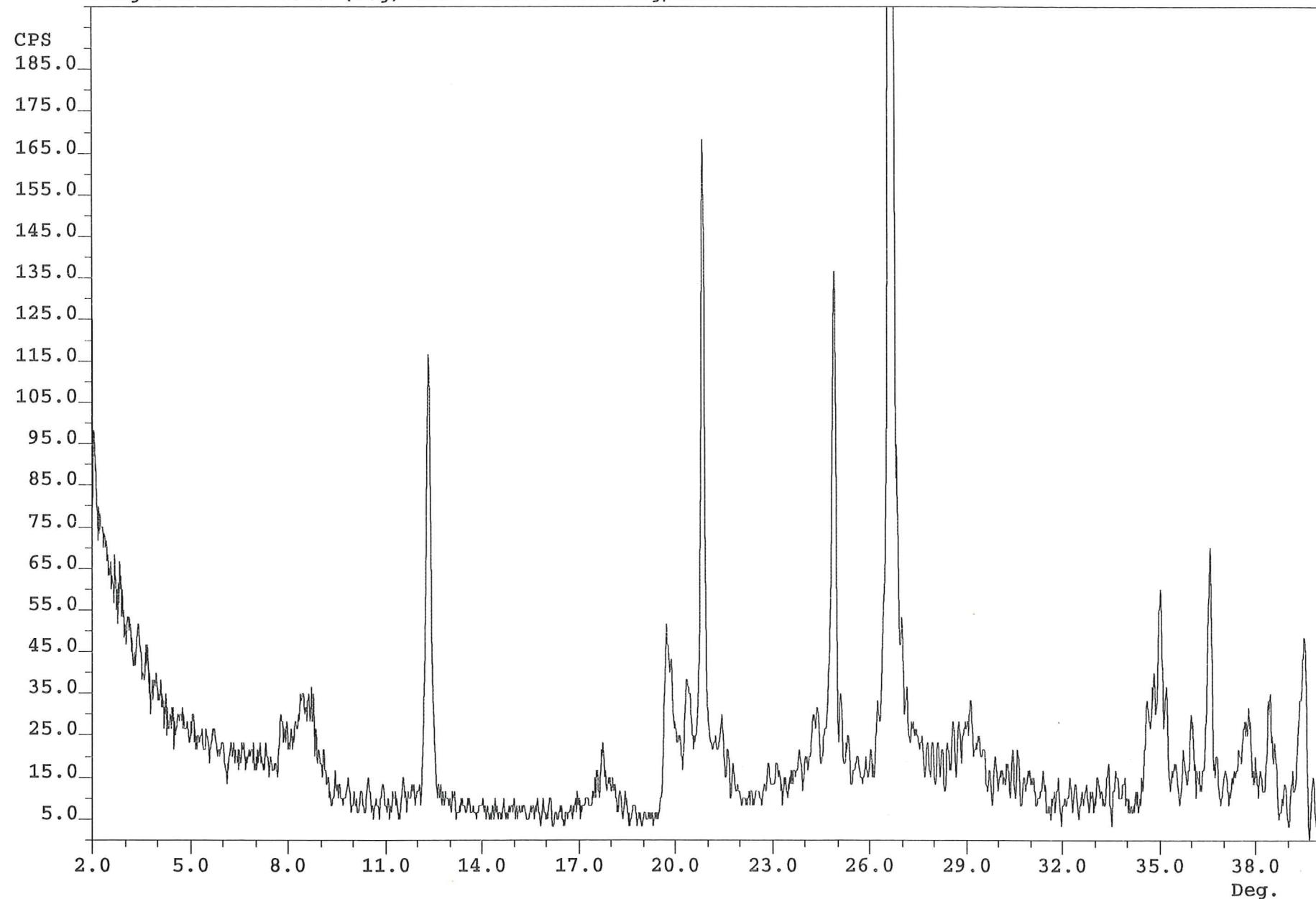
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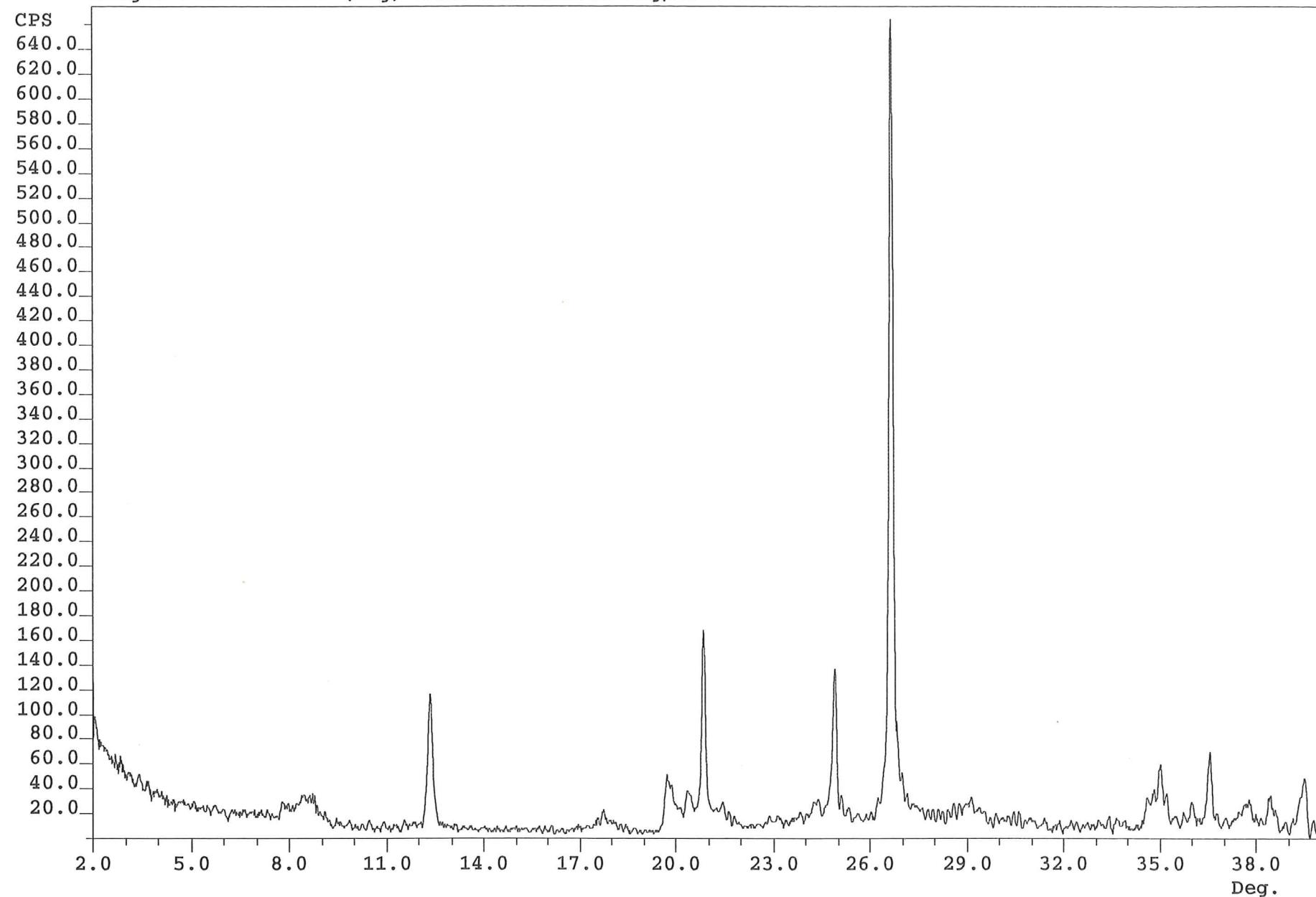
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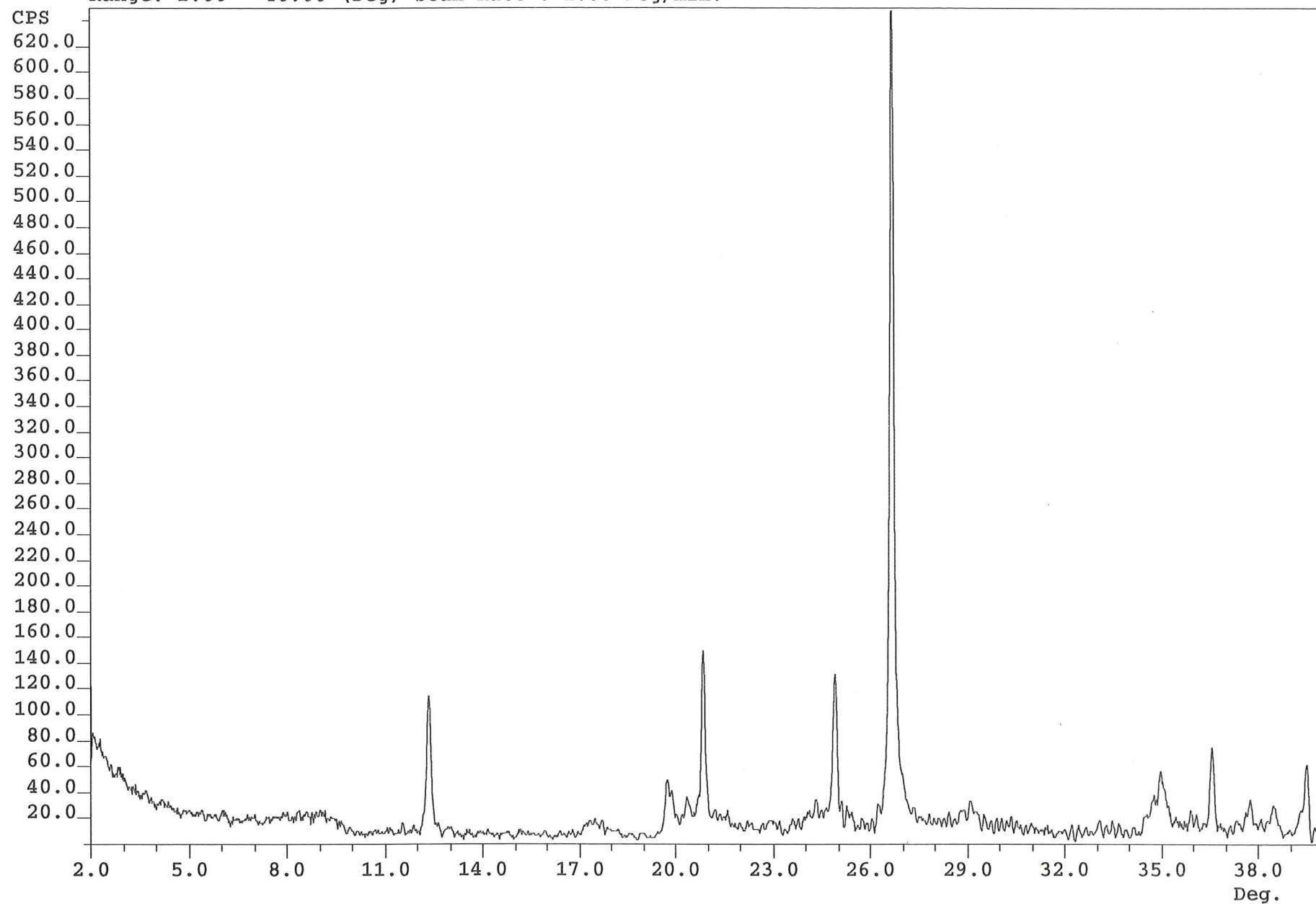
File: Rosebud-RBX-8-oriented, ID: 64816 (PIMA=illite) - oriented
Date: 10/18/99 15:31 Step : 0.020° Cnt Time: 0.600 Sec.
Range: 2.00 - 40.00 (Deg) Scan Rate : 2.00 Deg/min.



File: Rosebud-RBX-8-oriented, ID: 64816 (PIMA=illite) - oriented
Date: 10/18/99 15:31 Step : 0.020° Cnt Time: 0.600 Sec.
Range: 2.00 - 40.00 (Deg) Scan Rate : 2.00 Deg/min.

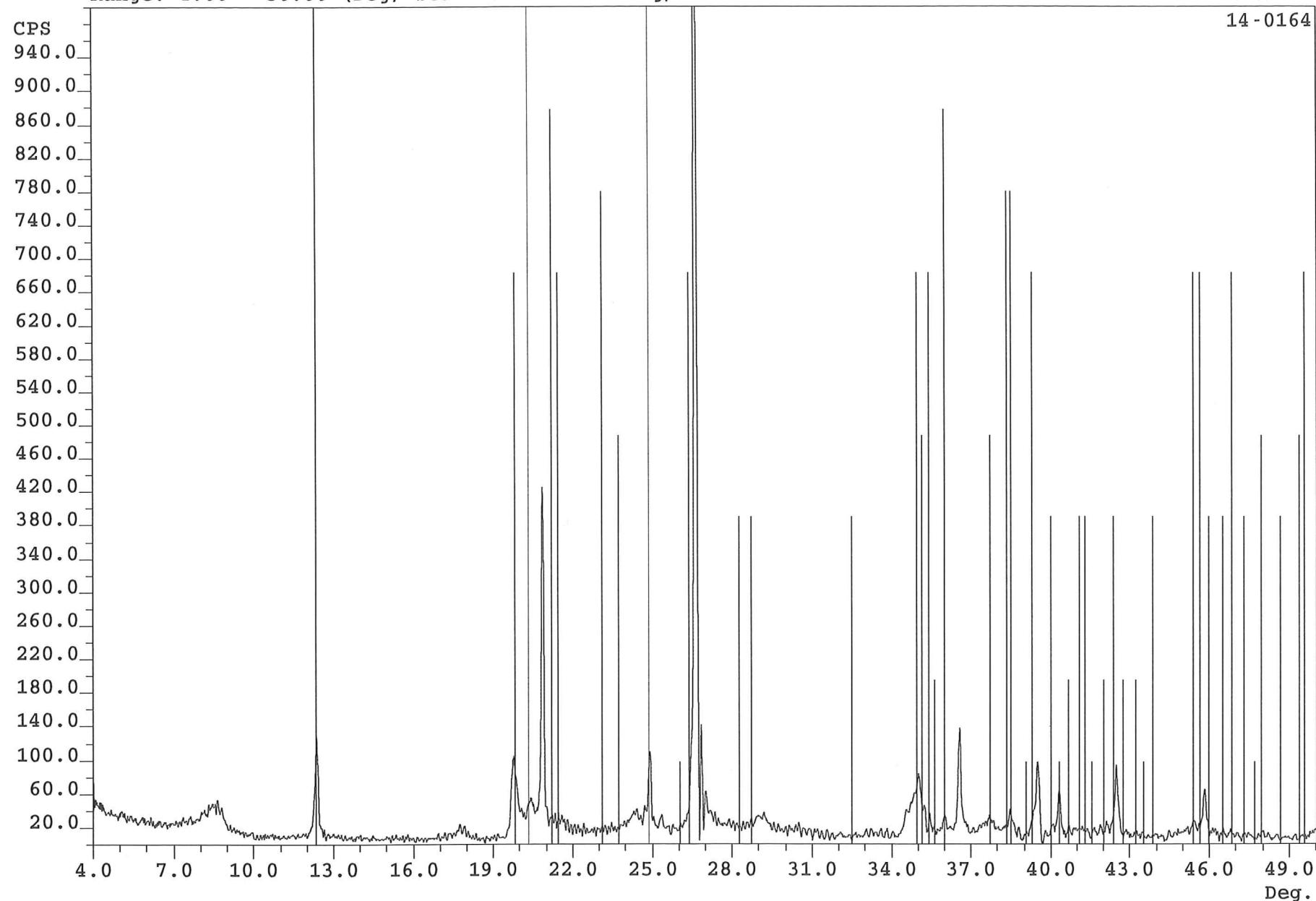


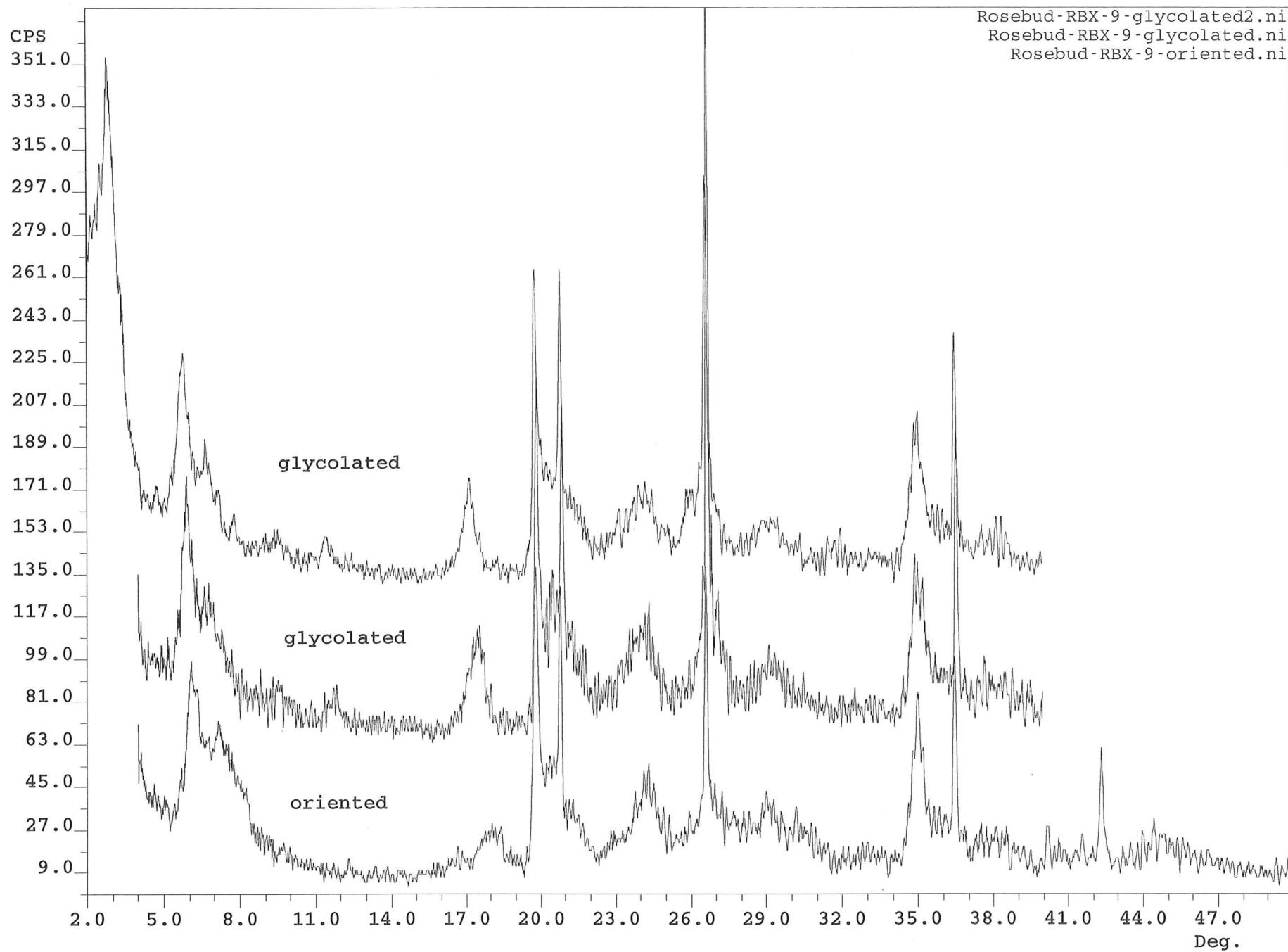
File: Rosebud-RBX-8-glycolated, ID: 65949 (Pima=illite)-glyc.
Date: 10/19/99 08:04 Step : 0.020° Cnt Time: 0.600 Sec.
Range: 2.00 - 40.00 (Deg) Scan Rate : 2.00 Deg/min.



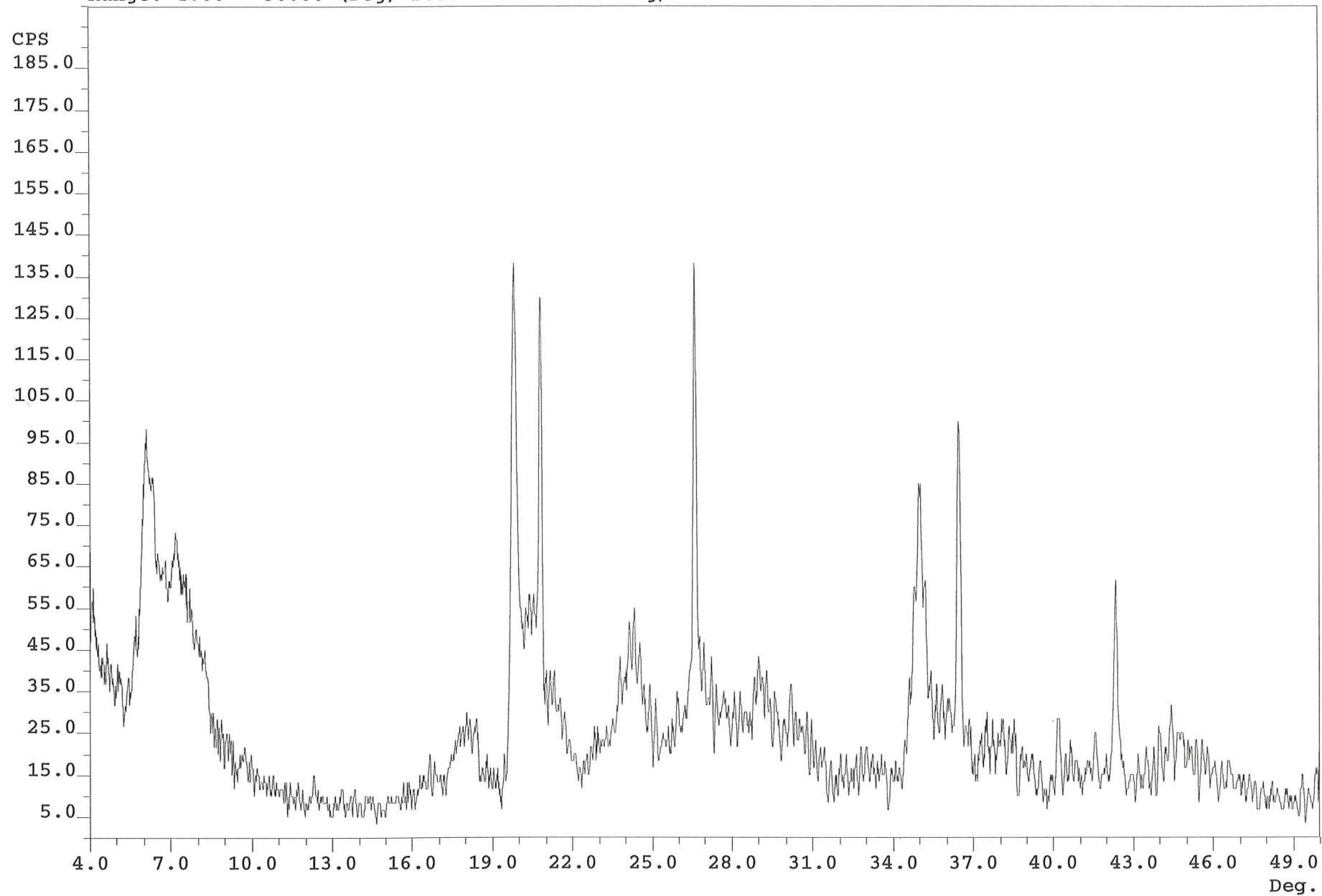
File: Rosebud-RBX-8, ID: 64816 (Pima=illite)
Date: 10/13/99 12:33 Step : 0.020° Cnt Time: 1.000 Sec.
Range: 4.00 - 50.00 (Deg) Scan Rate : 1.20 Deg/min.

Kaolinite

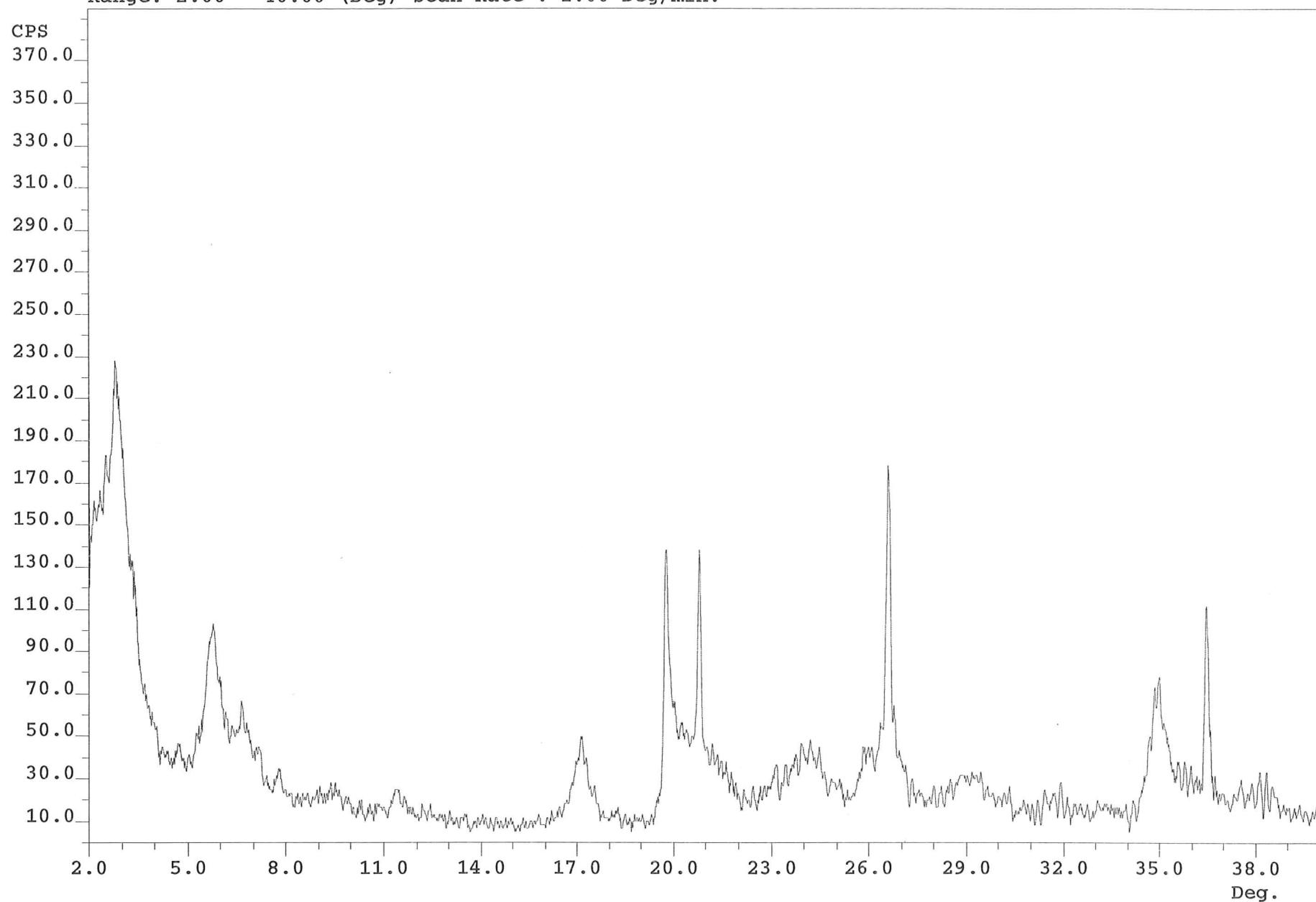




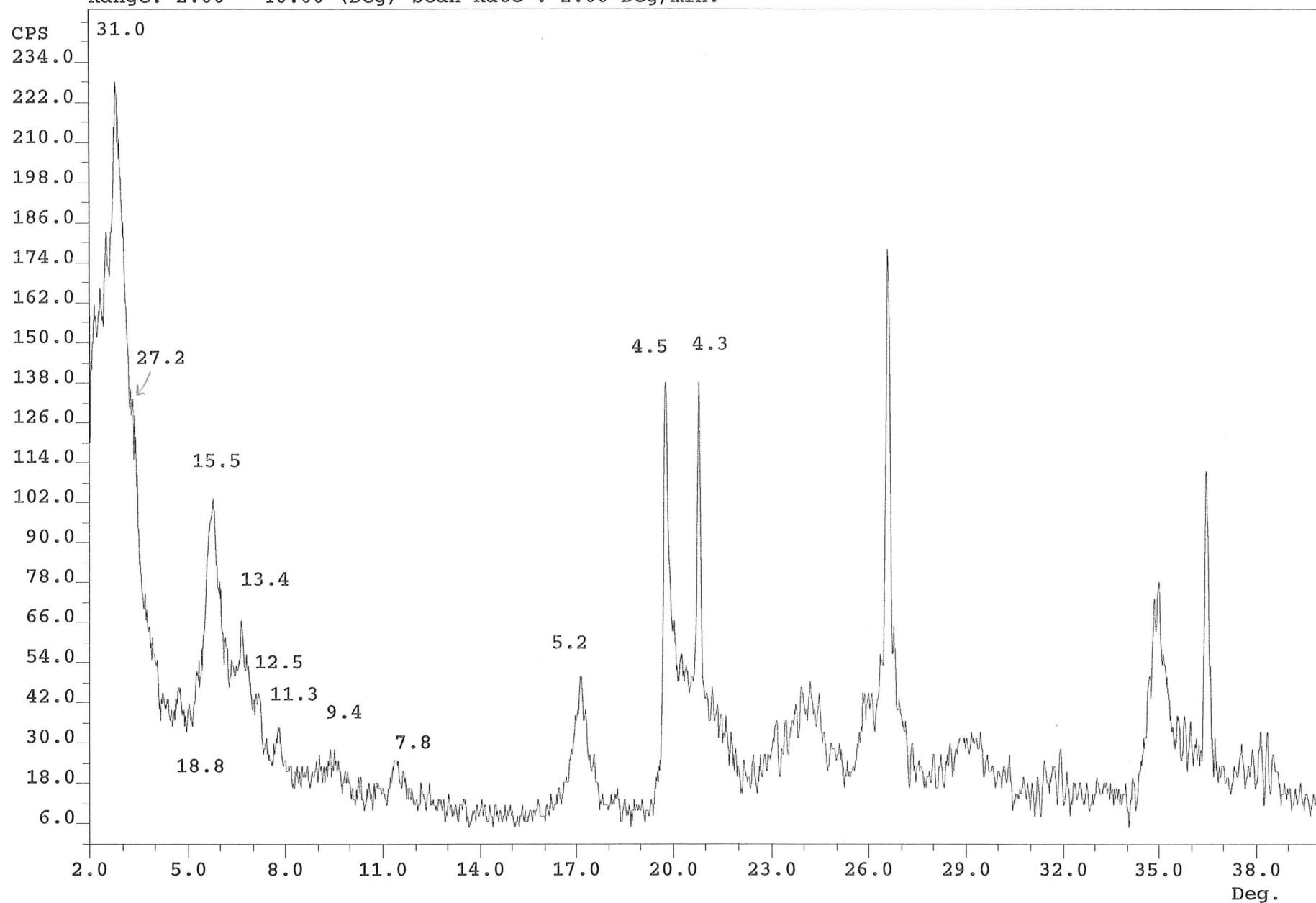
File: Rosebud-RBX-9-oriented, ID: 72867 (PIMA=illite/smectite) - oriented
Date: 10/13/99 15:02 Step : 0.020° Cnt Time: 0.600 Sec.
Range: 4.00 - 50.00 (Deg) Scan Rate : 2.00 Deg/min.



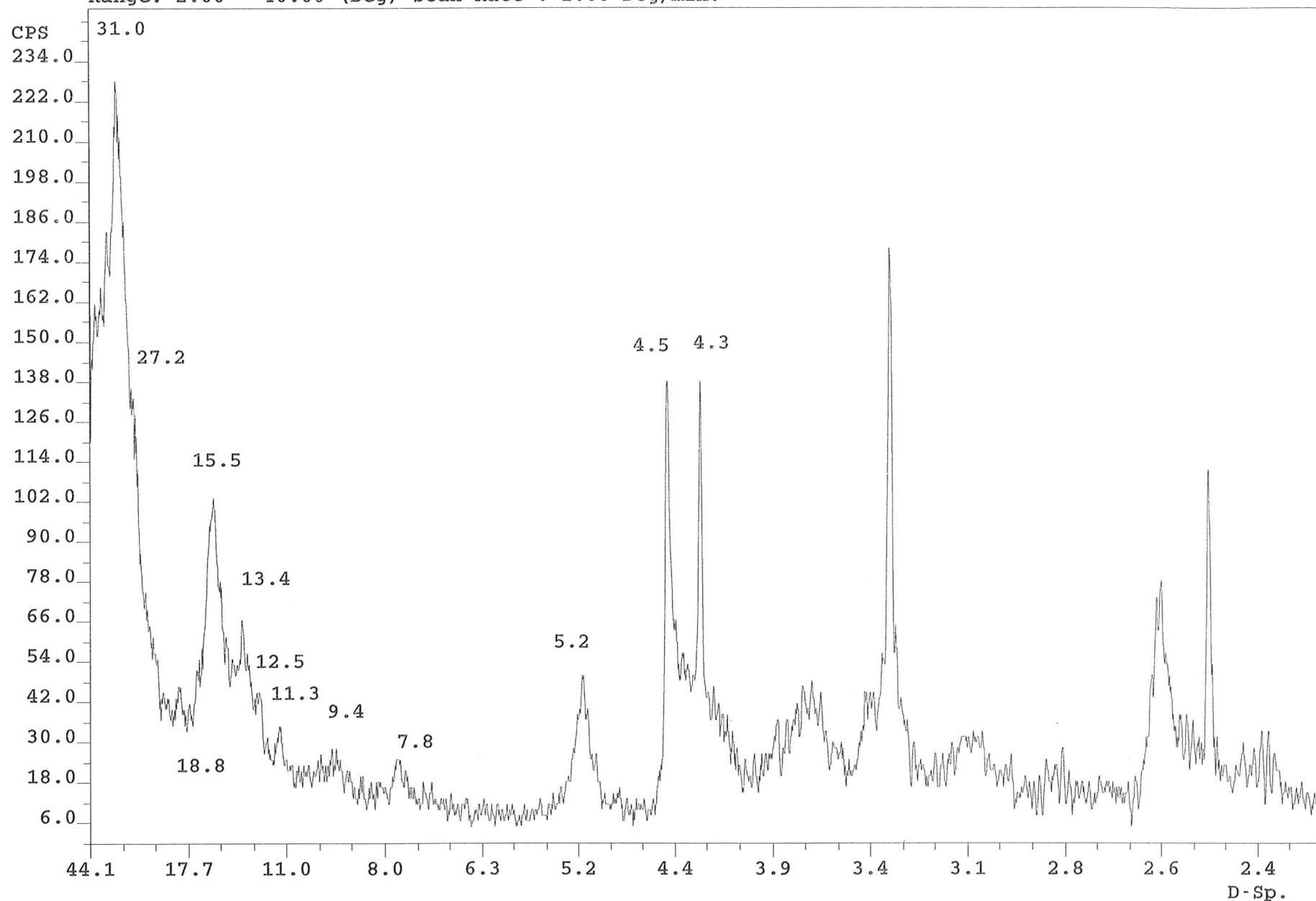
File: Rosebud-RBX-9-glycolated2, ID: 72867 (Pima=illite/smectite) -glyc.
Date: 10/18/99 14:27 Step : 0.020° Cnt Time: 0.600 Sec.
Range: 2.00 - 40.00 (Deg) Scan Rate : 2.00 Deg/min.



File: Rosebud-RBX-9-glycolated2, ID: 72867 (Pima=illite/smectite) -glyc.
Date: 10/18/99 14:46 Step : 0.020° Cnt Time: 0.600 Sec.
Range: 2.00 - 40.00 (Deg) Scan Rate : 2.00 Deg/min.



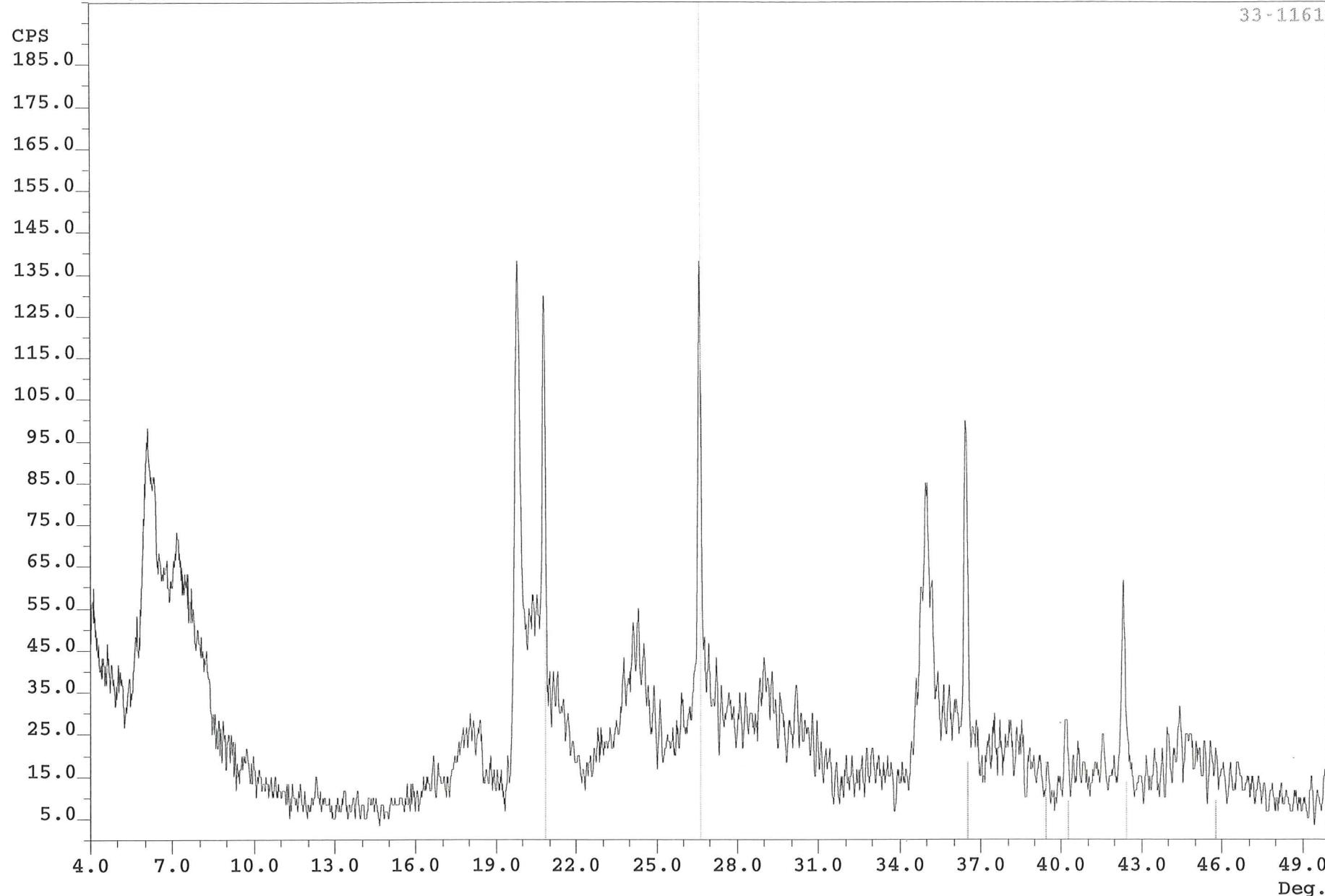
File: Rosebud-RBX-9-glycolated2, ID: 72867 (Pima=illite/smectite) -glyc.
Date: 10/18/99 14:46 Step : 0.020° Cnt Time: 0.600 Sec.
Range: 2.00 - 40.00 (Deg) Scan Rate : 2.00 Deg/min.

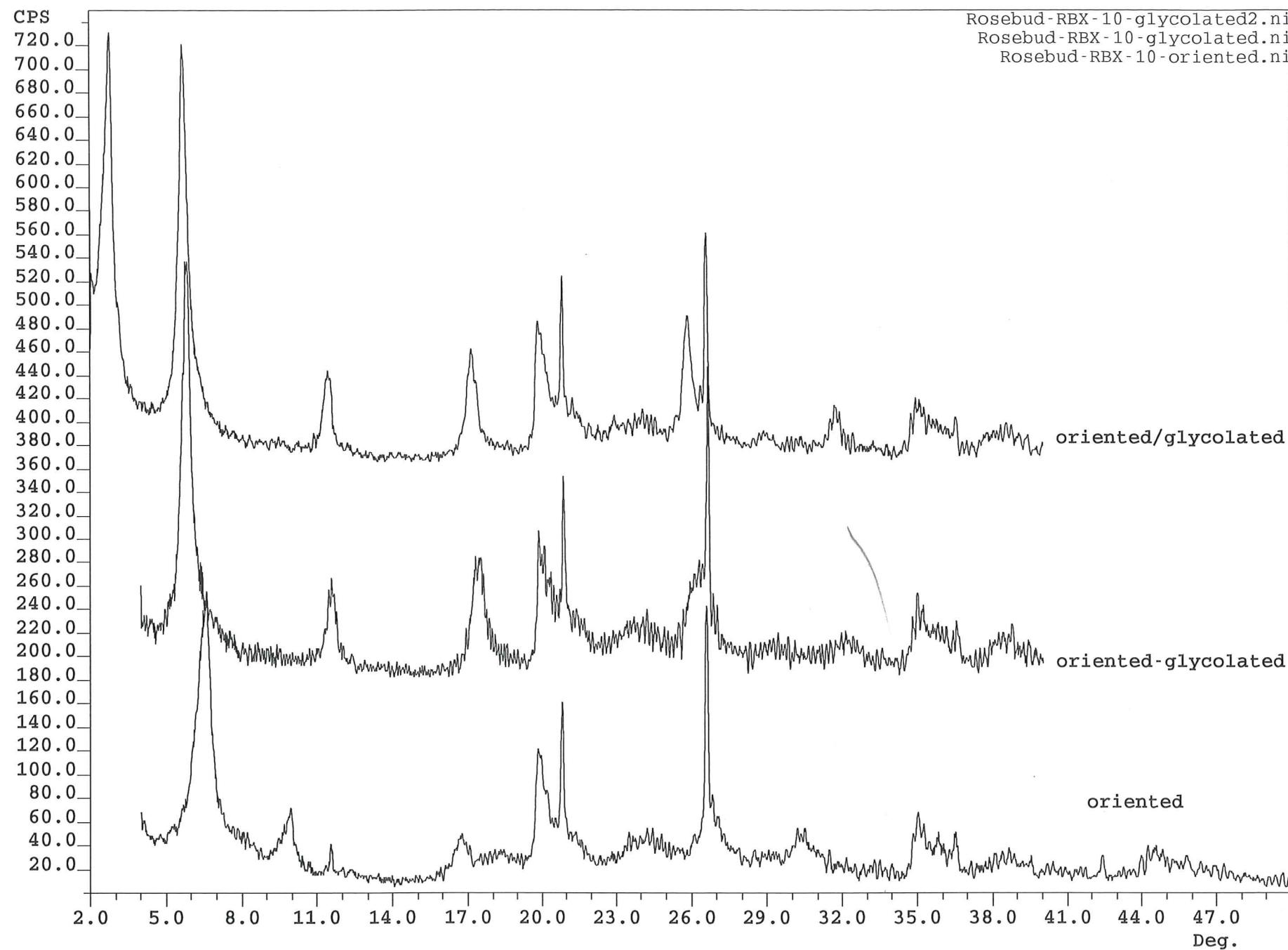


File: Rosebud-RBX-9-oriented, ID: 72867 (PIMA=illite/smectite) - oriented
Date: 10/13/99 15:02 Step : 0.020° Cnt Time: 0.600 Sec.
Range: 4.00 - 50.00 (Deg) Scan Rate : 2.00 Deg/min.

Quartz

33 - 1161

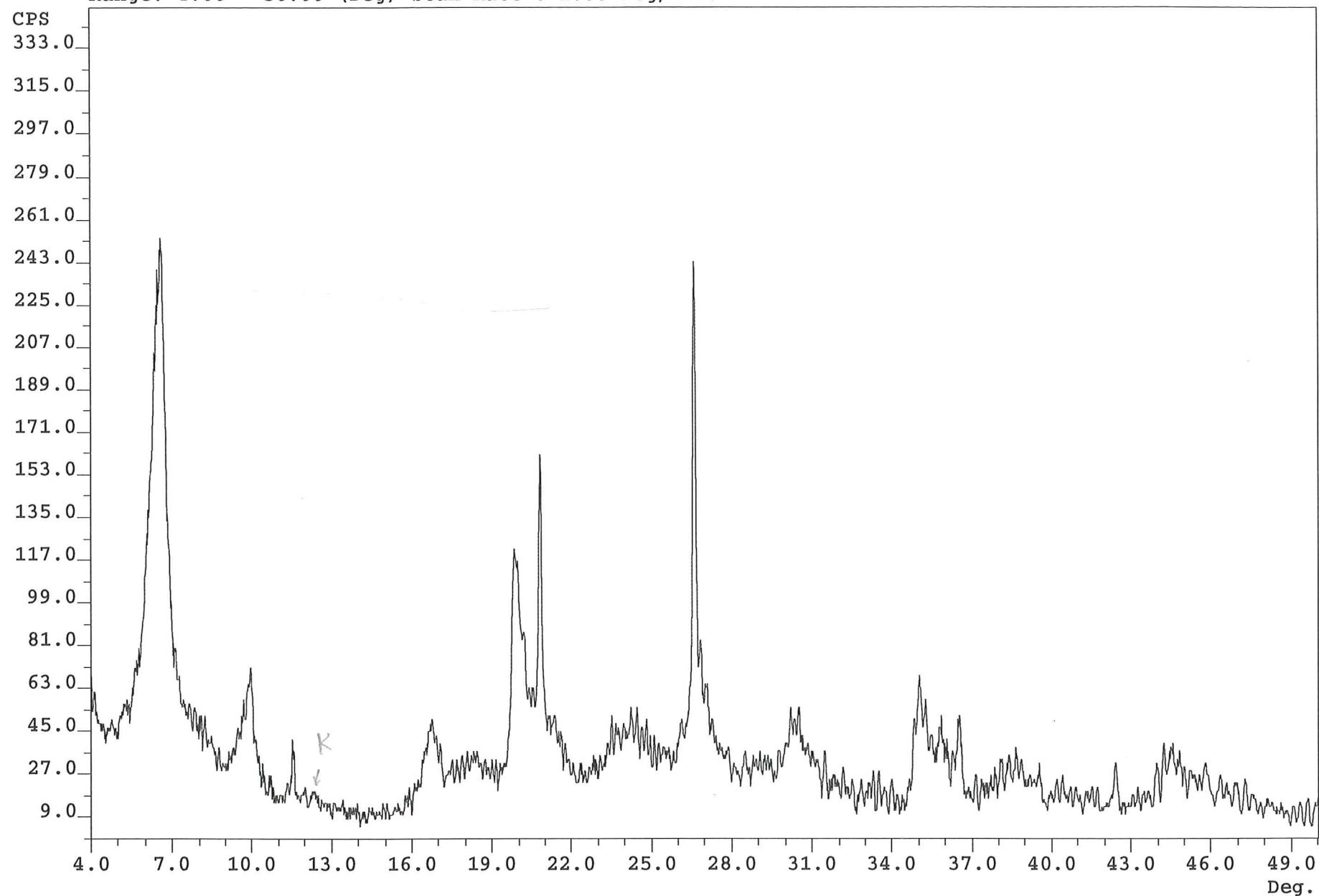




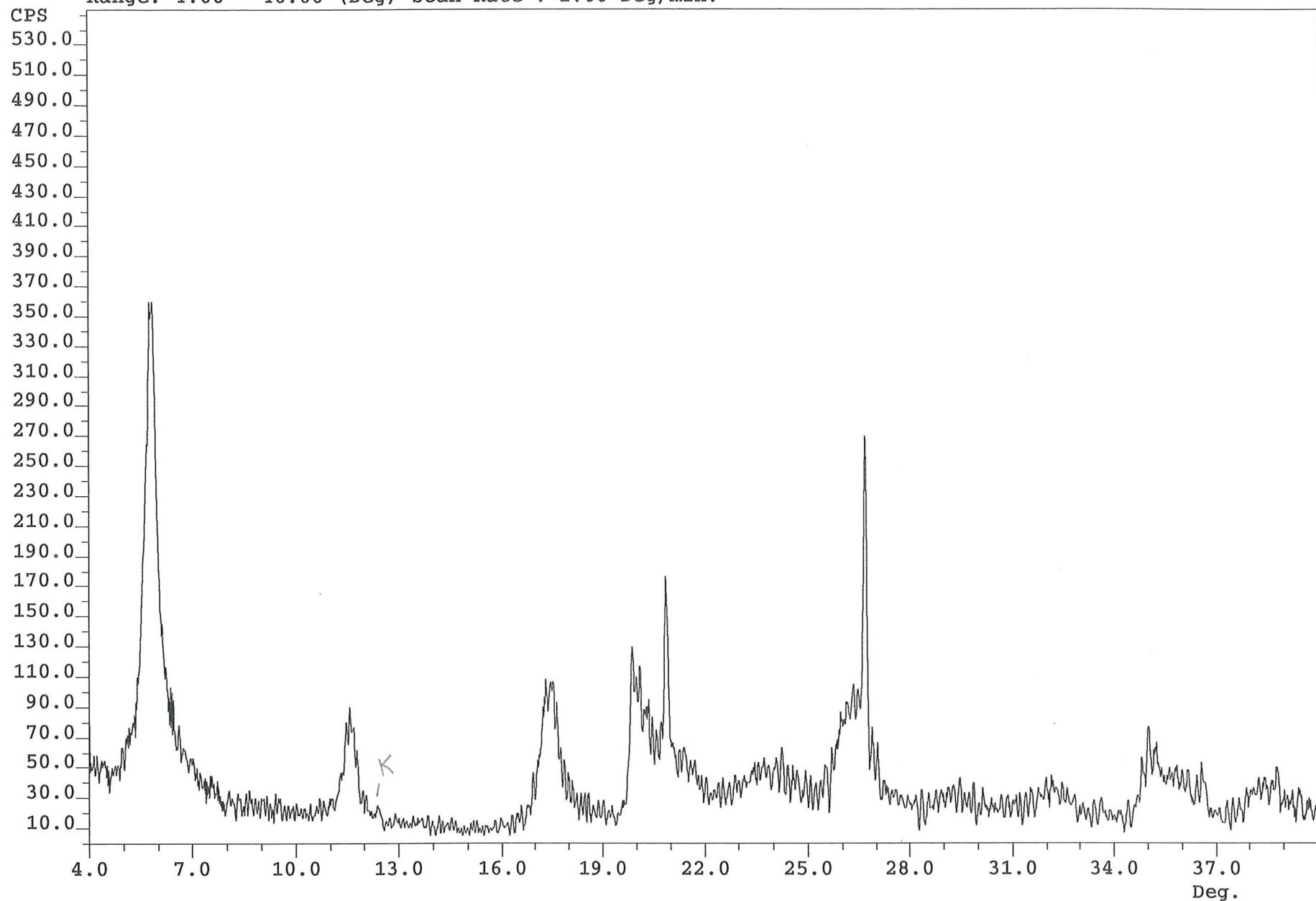
67414

Illite/smectite

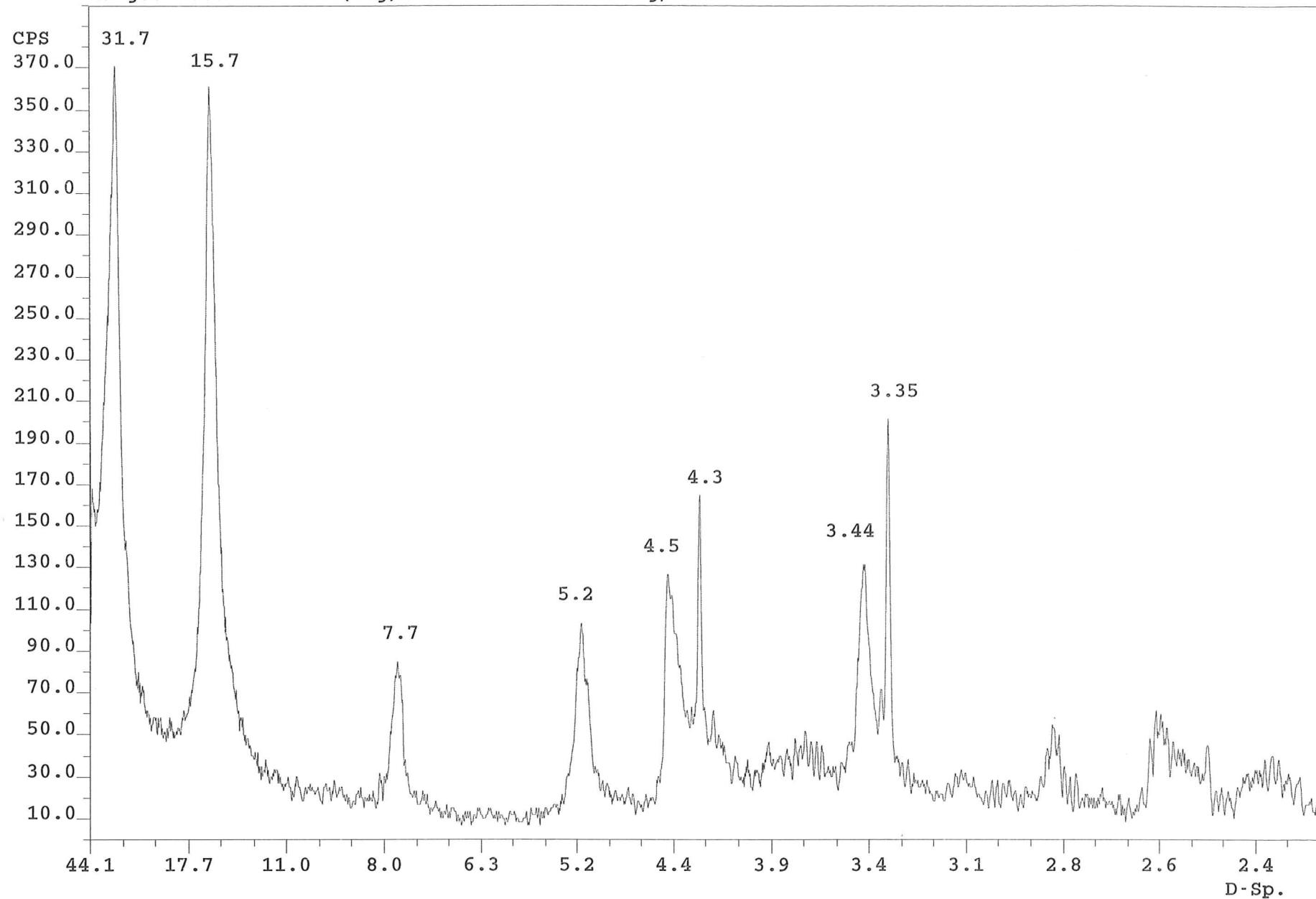
File: Rosebud-RBX-10-oriented, ID: 56429 (PIMA=Dickite/Nacrite)
Date: 10/13/99 15:48 Step : 0.020° Cnt Time: 0.600 Sec.
Range: 4.00 - 50.00 (Deg) Scan Rate : 2.00 Deg/min.



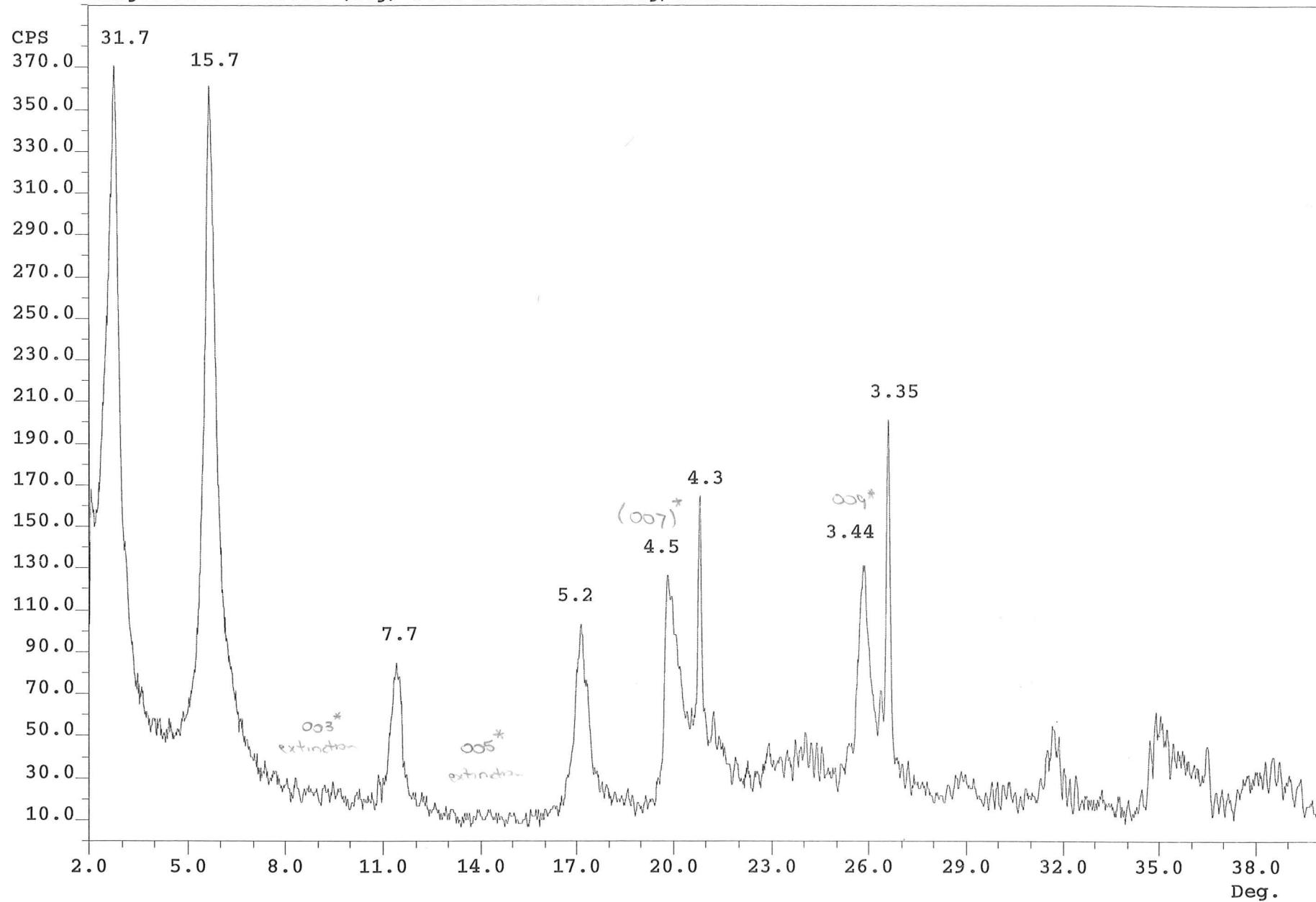
File: Rosebud-RBX-10-glycolated, ID: 67414 (Pima=illite/smectite) -glyc.
Date: 10/15/99 09:31 Step : 0.020° Cnt Time: 0.600 Sec.
Range: 4.00 - 40.00 (Deg) Scan Rate : 2.00 Deg/min.

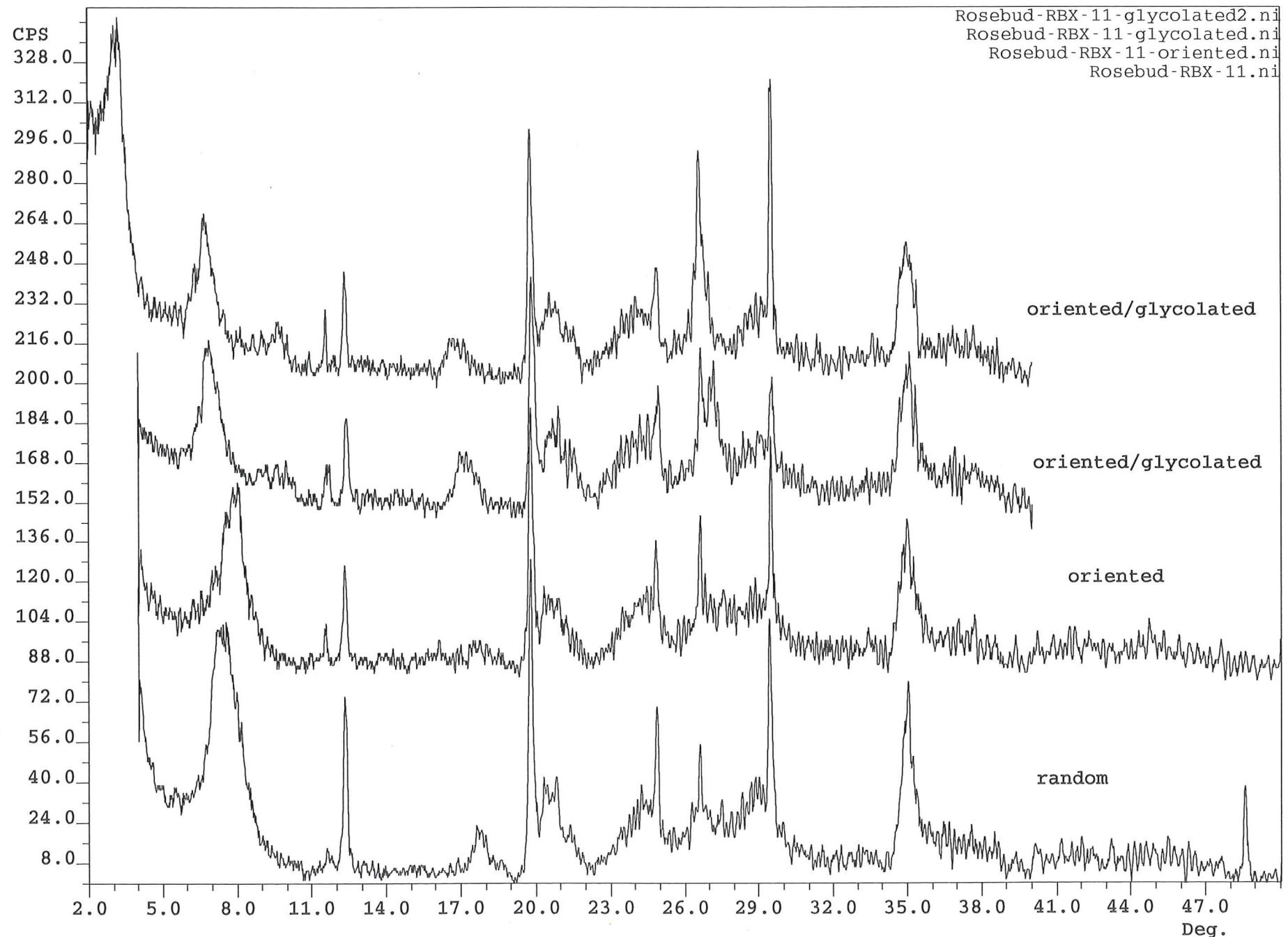


File: Rosebud-RBX-10-glycolated2, ID: 67414 (Pima=illite/smectite) -glyc.
Date: 10/18/99 14:51 Step : 0.020° Cnt Time: 0.600 Sec.
Range: 2.00 - 40.00 (Deg) Scan Rate : 2.00 Deg/min.

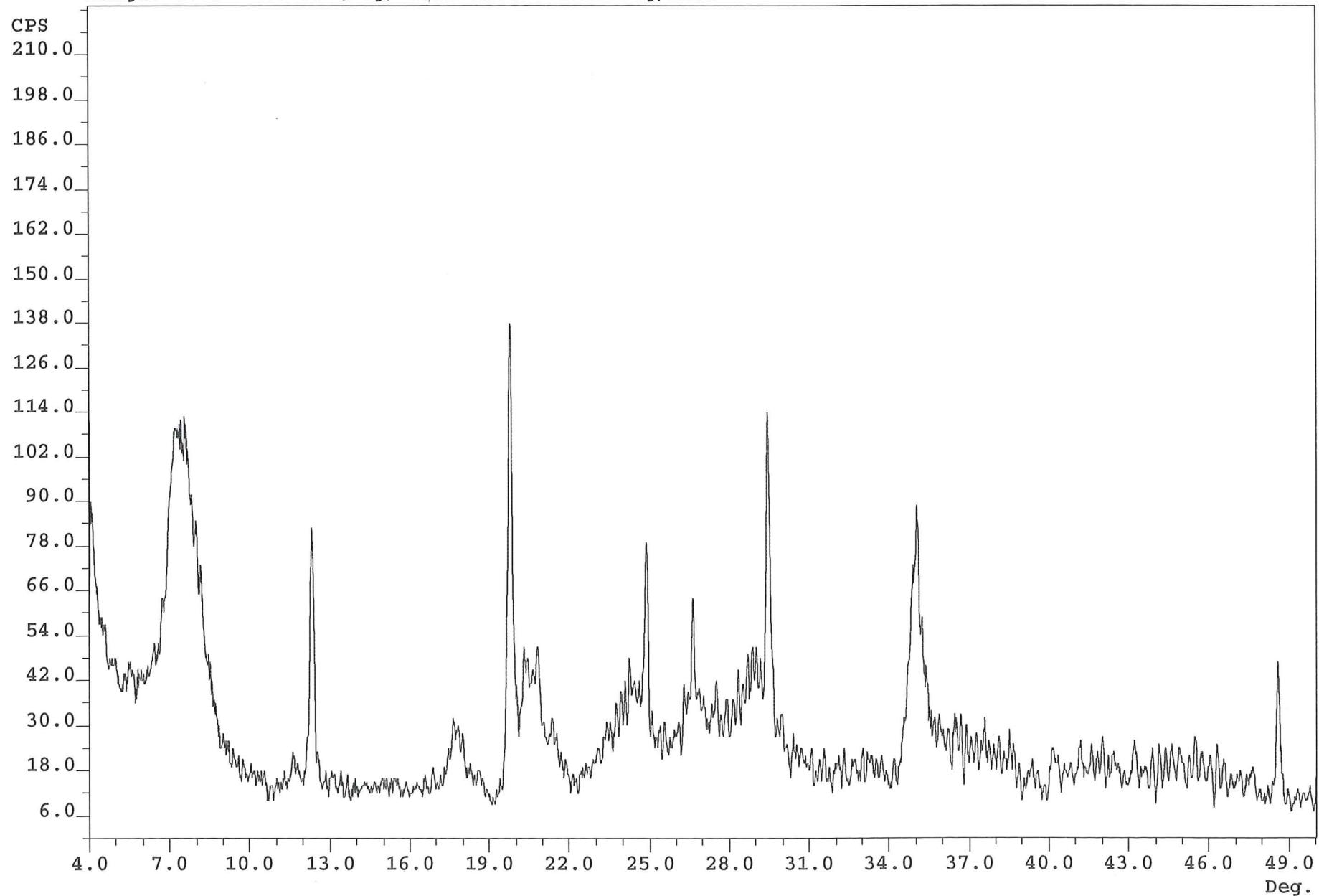


File: Rosebud-RBX-10-glycolated2, ID: 67414 (Pima=illite/smectite) -glyc.
Date: 10/18/99 14:51 Step : 0.020° Cnt Time: 0.600 Sec.
Range: 2.00 - 40.00 (Deg) Scan Rate : 2.00 Deg/min.

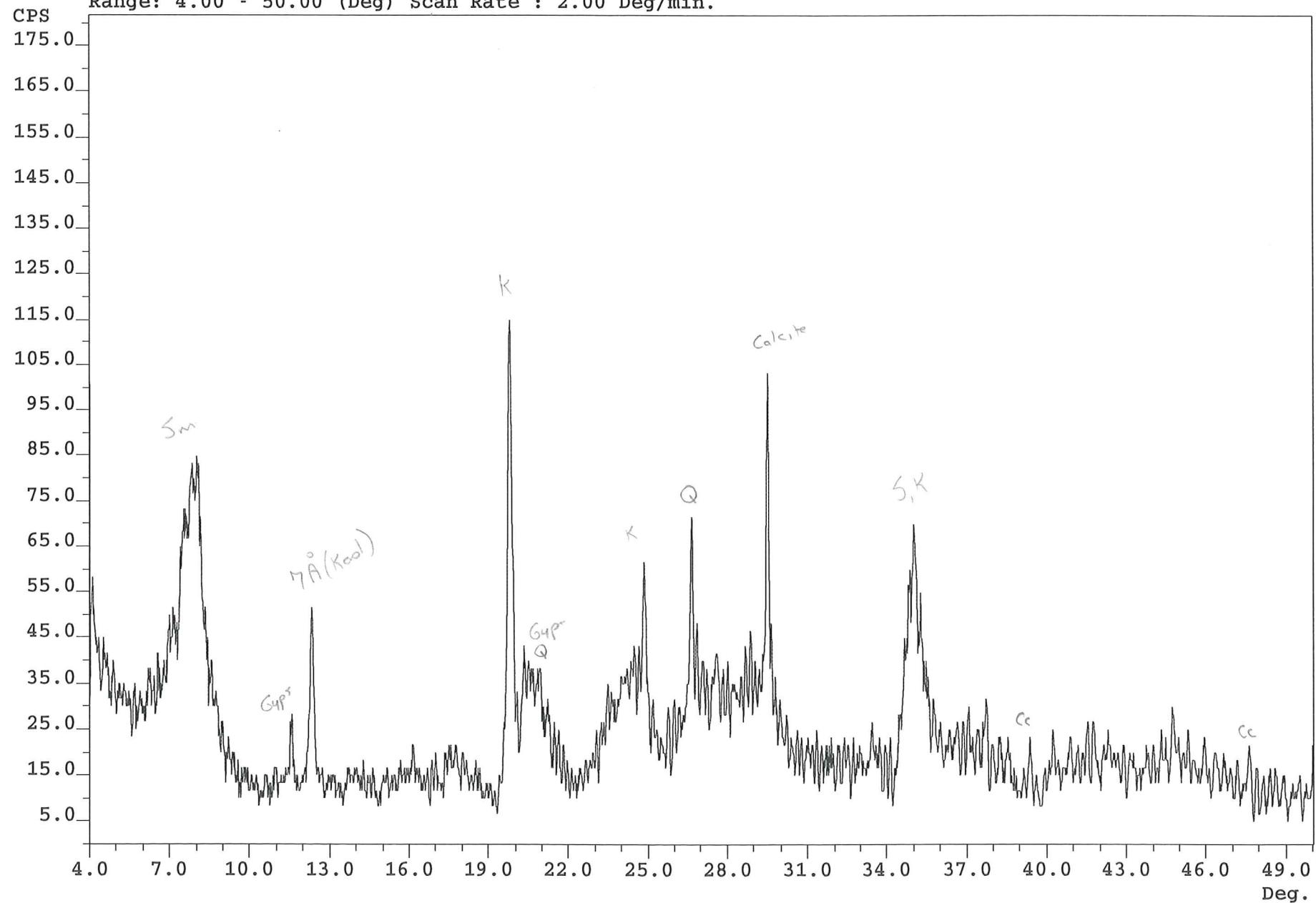




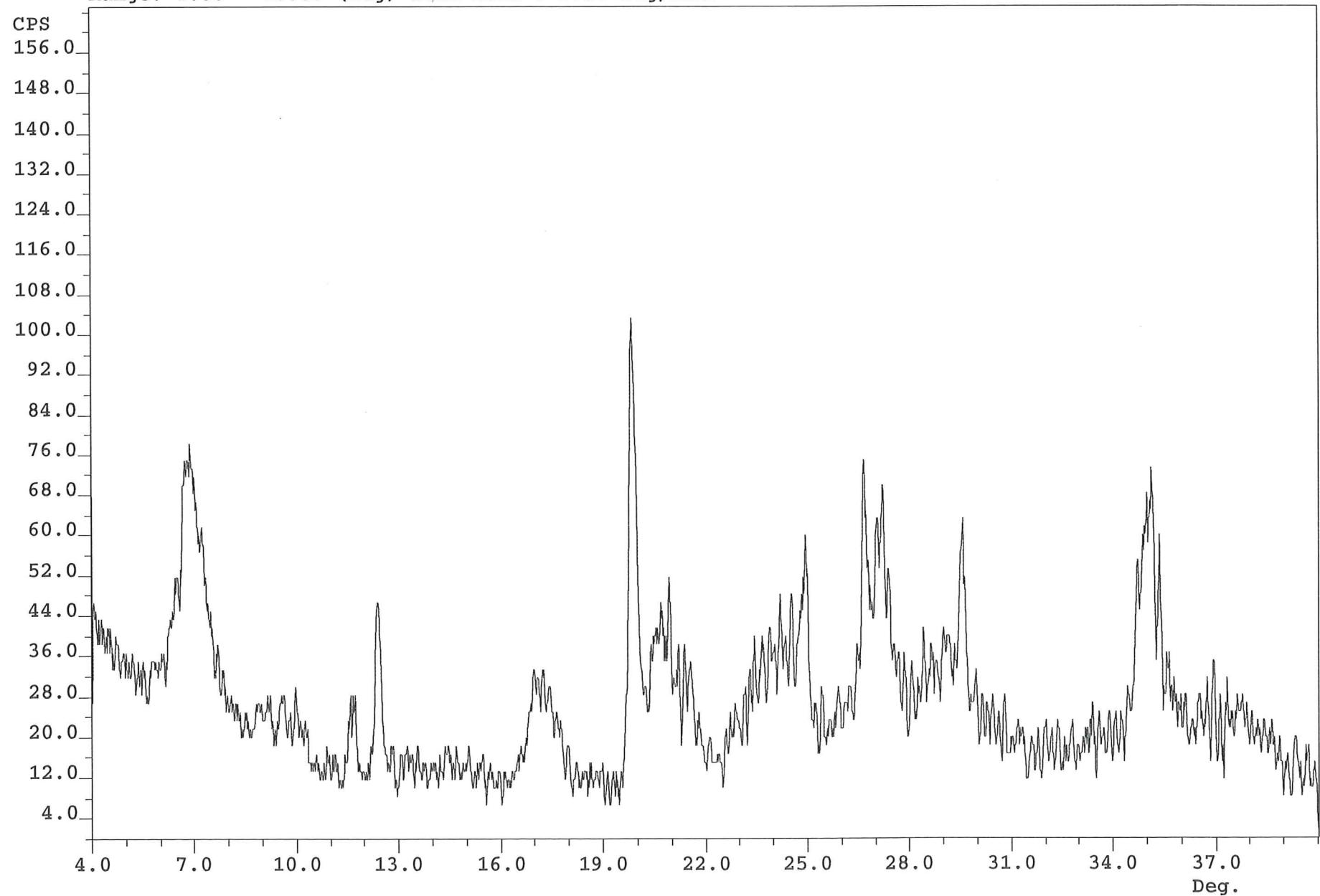
File: Rosebud-RBX-11, ID: 72875 (Pima=no ID)
Date: 10/13/99 14:59 Step : 0.020° Cnt Time: 1.000 Sec.
Range: 4.00 - 50.00 (Deg) Scan Rate : 1.20 Deg/min.



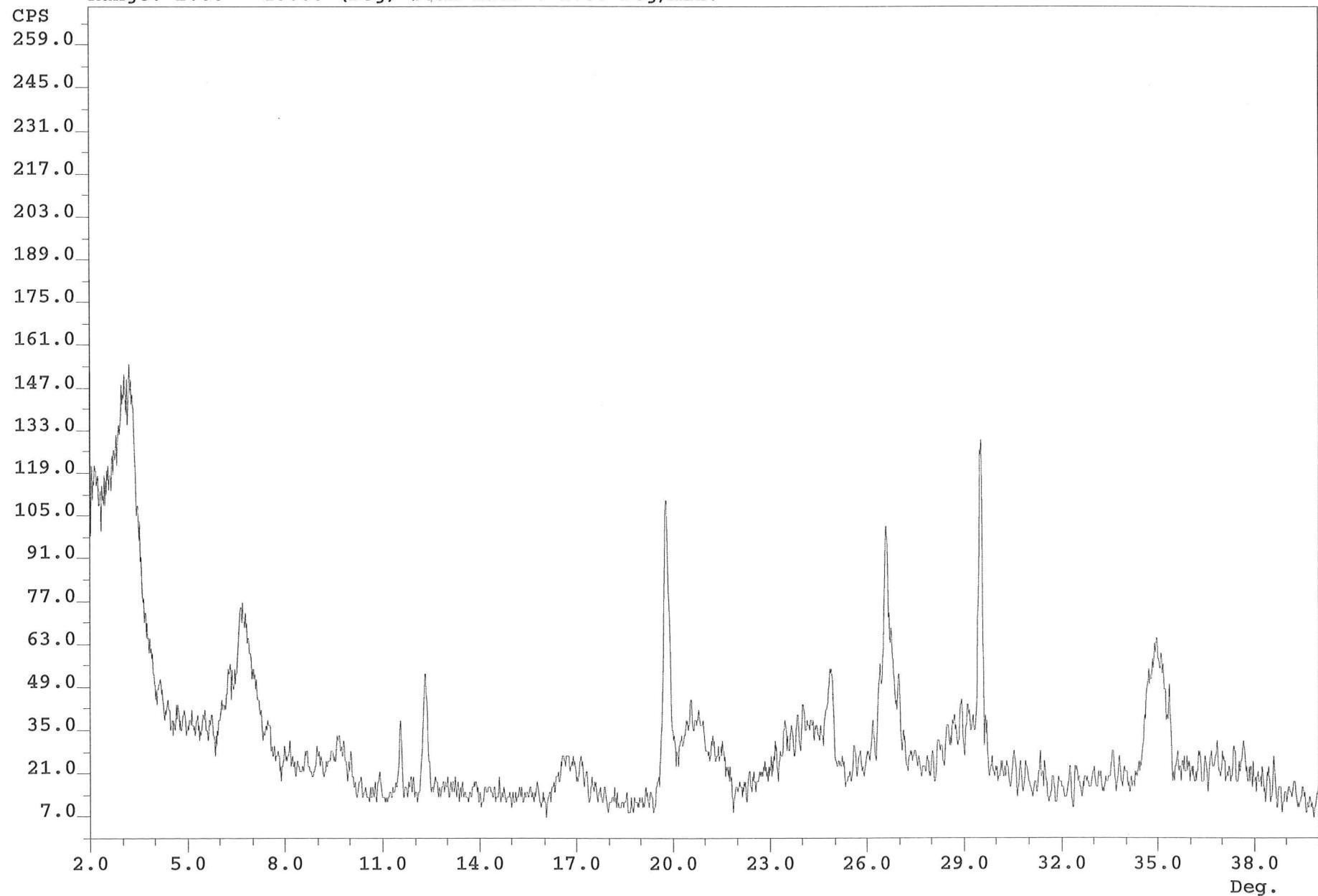
File: Rosebud-RBX-11-oriented, ID: 72875 (PIMA=no ID)
Date: 10/13/99 18:29 Step : 0.020° Cnt Time: 0.600 Sec.
Range: 4.00 - 50.00 (Deg) Scan Rate : 2.00 Deg/min.



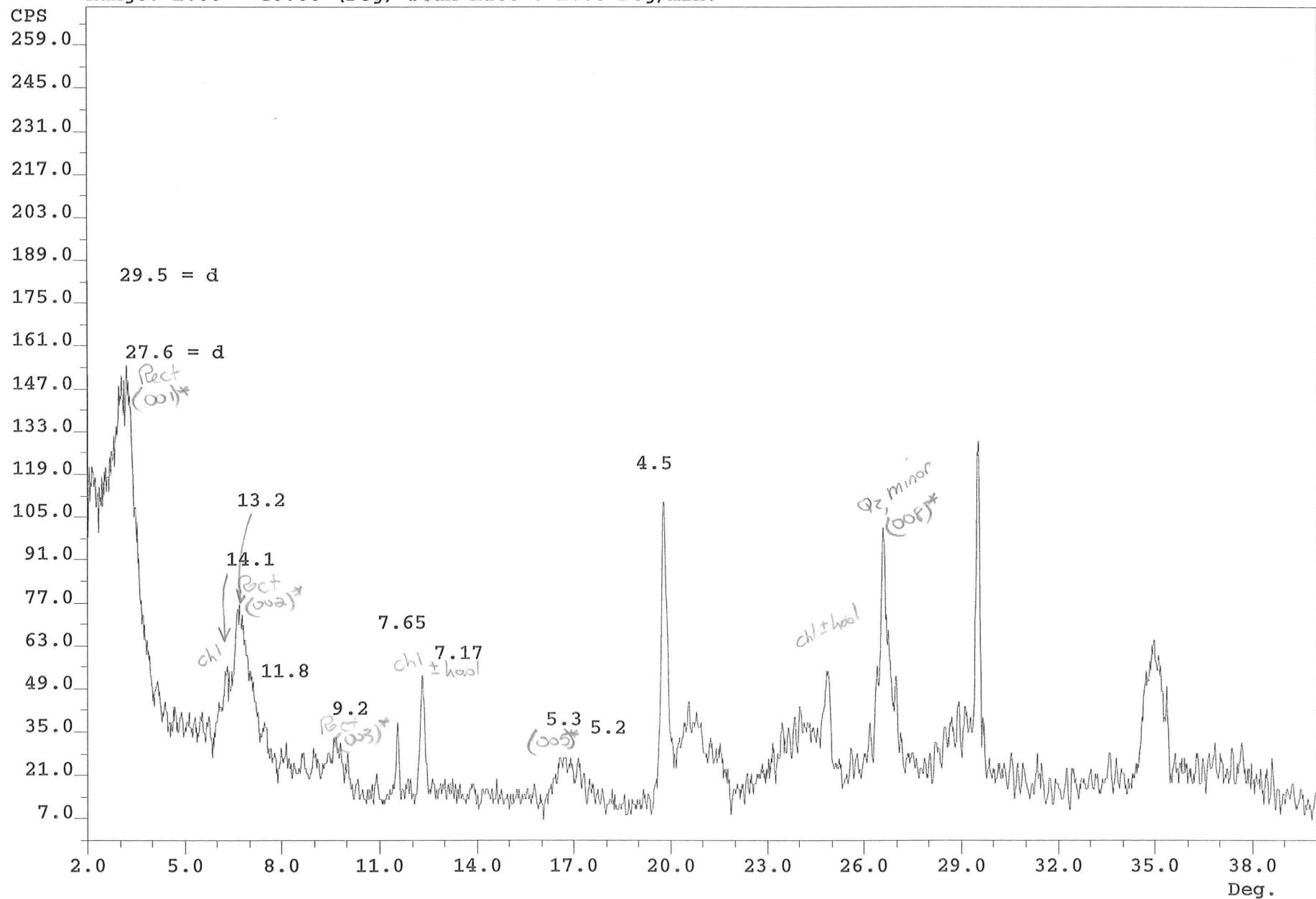
File: Rosebud-RBX-11-glycolated, ID: 72875 (Pima=no ID) -glyc.
Date: 10/15/99 09:52 Step : 0.020° Cnt Time: 0.600 Sec.
Range: 4.00 - 40.00 (Deg) Scan Rate : 2.00 Deg/min.



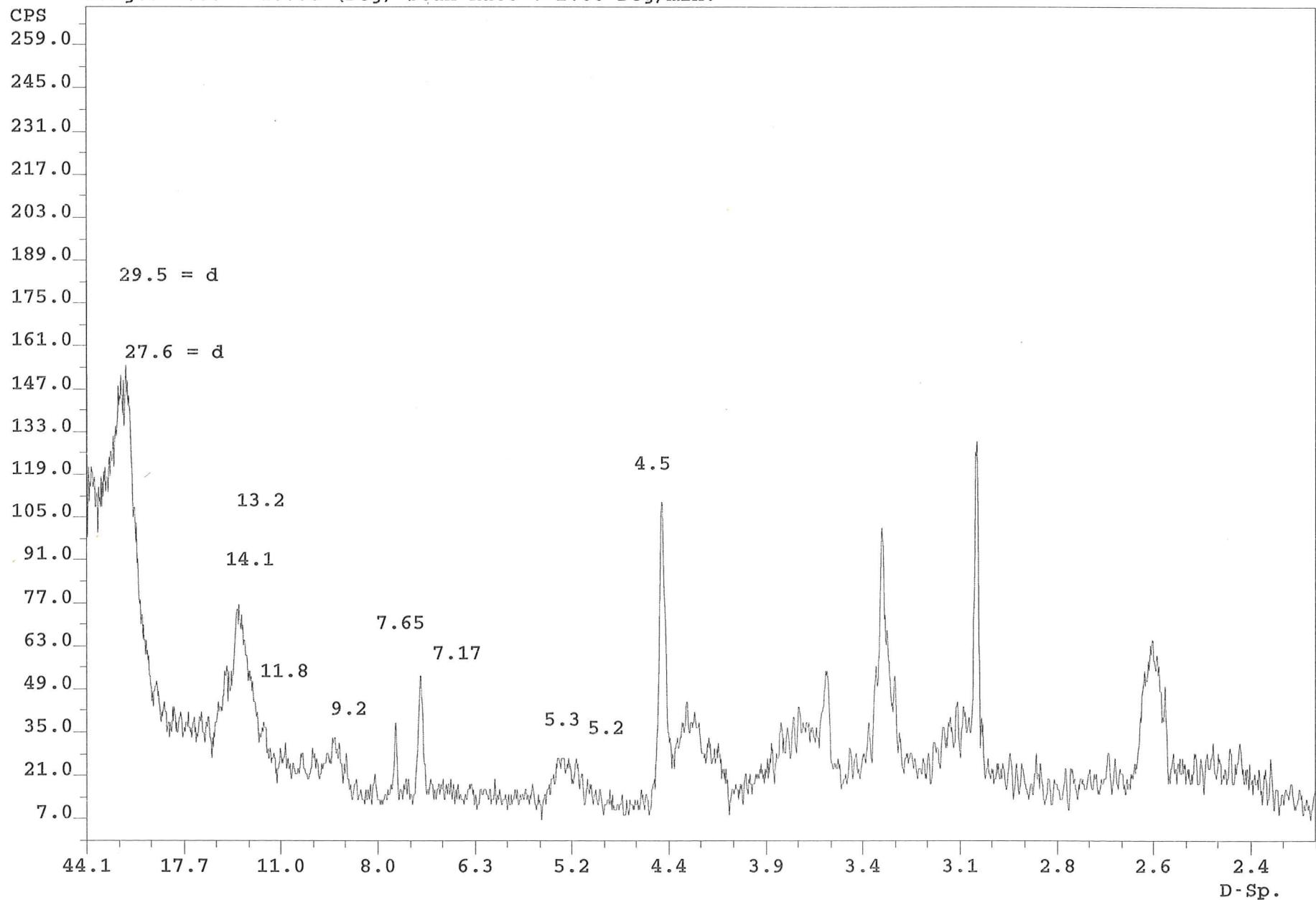
File: Rosebud-RBX-11-glycolated2, ID: 72875 (Pima=no ID) -glyc.
Date: 10/18/99 13:51 Step : 0.020° Cnt Time: 0.600 Sec.
Range: 2.00 - 40.00 (Deg) Scan Rate : 2.00 Deg/min.



File: Rosebud-RBX-11-glycolated2, ID: 72875 (Pima=no ID) -glyc.
Date: 10/18/99 14:10 Step : 0.020° Cnt Time: 0.600 Sec.
Range: 2.00 - 40.00 (Deg) Scan Rate : 2.00 Deg/min.



File: Rosebud-RBX-11-glycolated2, ID: 72875 (Pima=no ID) -glyc.
Date: 10/18/99 14:10 Step : 0.020° Cnt Time: 0.600 Sec.
Range: 2.00 - 40.00 (Deg) Scan Rate : 2.00 Deg/min.



File: Rosebud-RBX-11-glycolated3, ID: 72875 (Pima=no ID) -glyc. (0.3, 0.1)
Date: 10/18/99 14:22 Step : 0.020° Cnt Time: 0.600 Sec.
Range: 2.00 - 22.00 (Deg) Scan Rate : 2.00 Deg/min.

