

APPENDIX A: Conditions for X-ray diffraction measurements

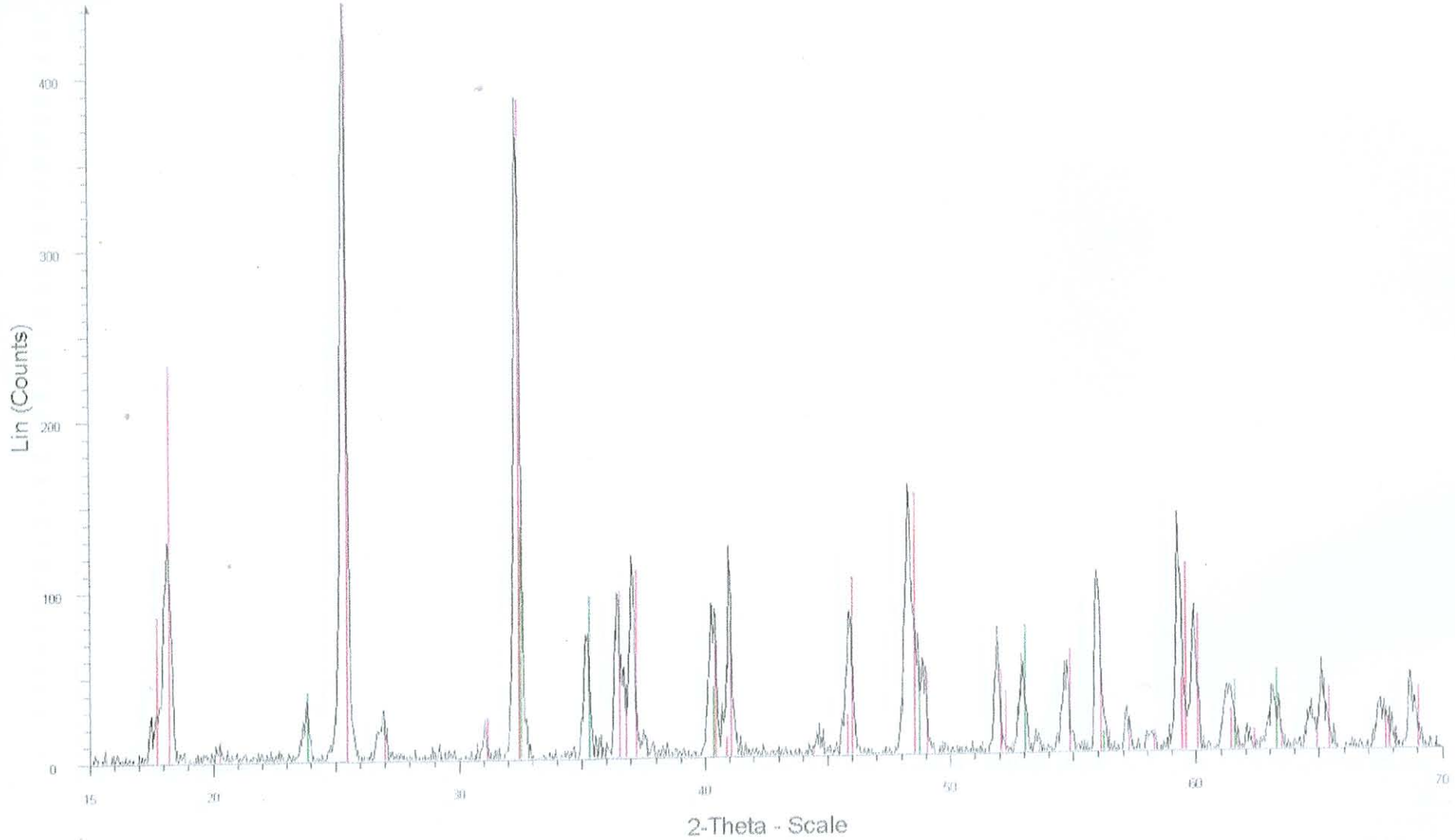
The samples were prepared using standard Siemens sample holders and the powder was pressed into the holder using a glass slide.

Instrument and data collection parameters:

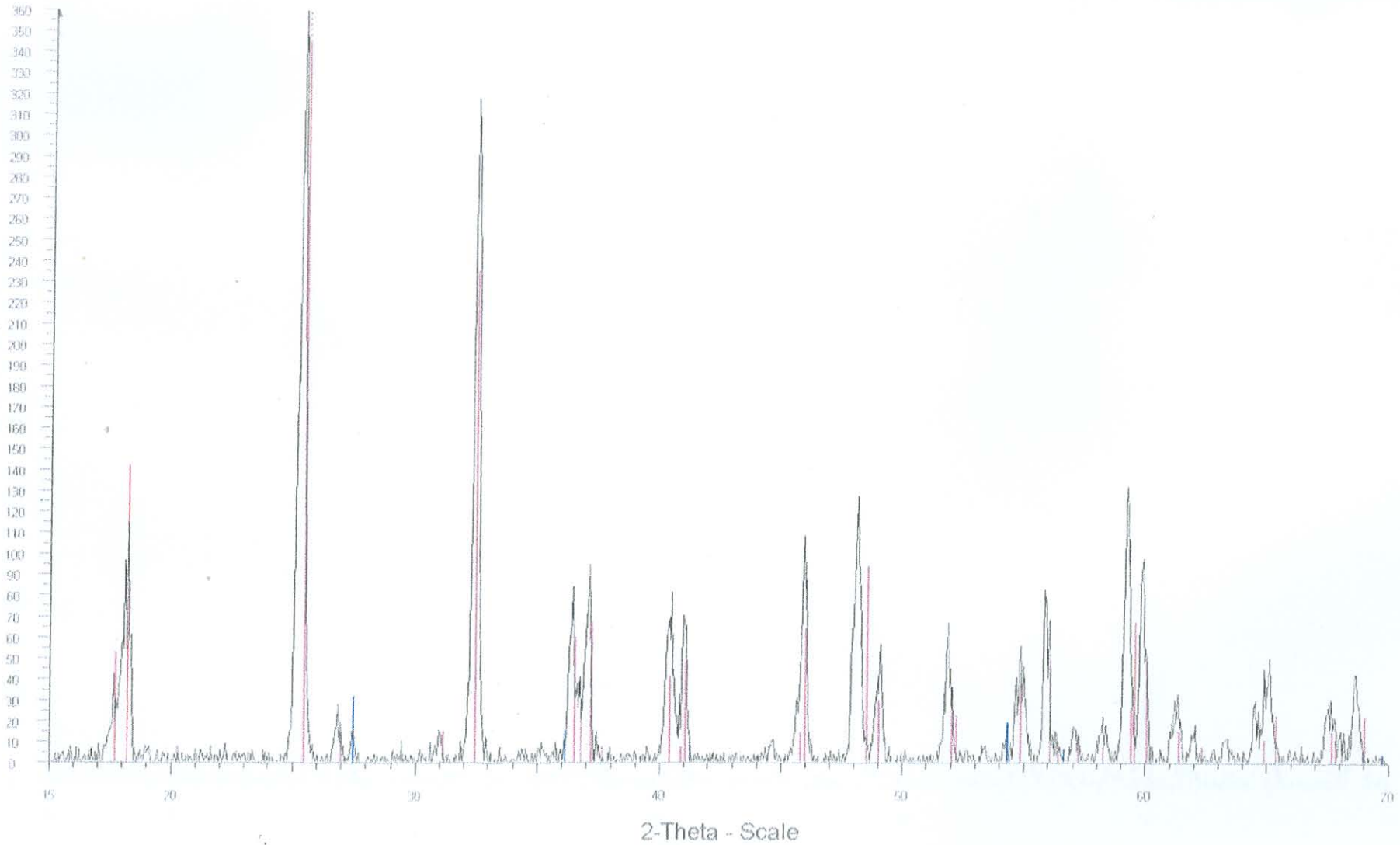
Instrument	Siemens D-501
Radiation	Cu K_{α} (1.5418 Å)
Temperature	25°C
Specimen	flat-plate, rotating (30 RPM)
Power Setting	40 kV, 40 mA
Soller slits	2° (diffracted beam side)
Divergence slits	1°
Receiving slits	0.05°
Monochromator	secondary, graphite
Detector	scintillation counter
Range of 2θ	3-70° 2θ
Step width	0.03° 2θ
Time per step	2s

APPENDIX B: Combined results from chemical analysis of slag samples, The columns labelled "Major" and "Minor" show the phases detected by X-ray diffraction ("psb" indicates the M_3O_5 phase).

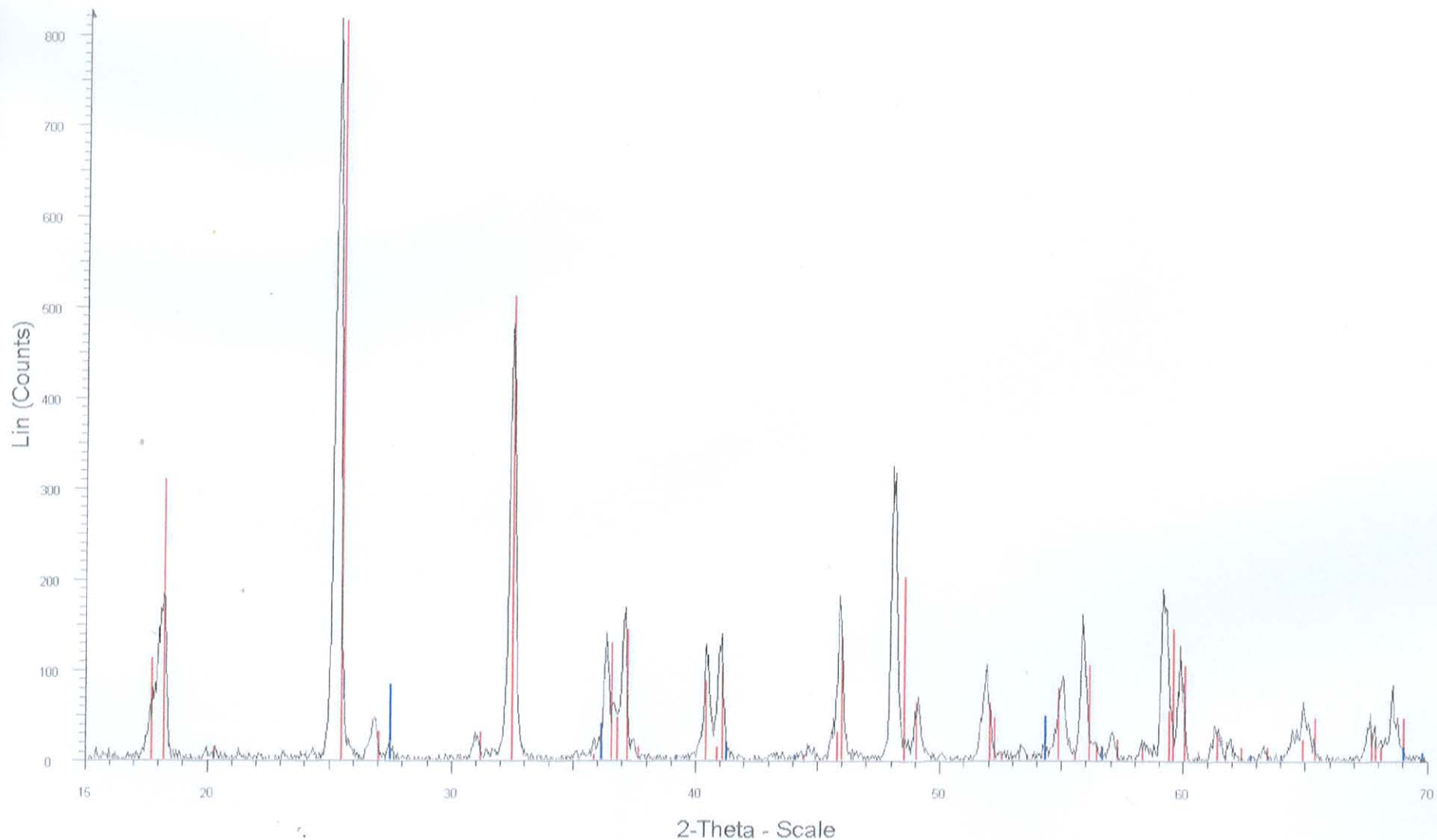
Slag Nr	FeO	TiO ₂	Ti ₂ O ₃	SiO ₂	Al ₂ O ₃	CaO	MgO	MnO	Cr ₂ O ₃	V ₂ O ₃	Major	Minor
83	10.2	54.0	30.9	1.34	0.86	0.23	1.10	1.17	0.08	0.35	psb	rutile
69	10.5	54.2	30.5	1.35	0.86	0.21	1.19	1.17	0.09	0.36	psb	rutile
20	11.0	55.1	28.3	1.51	0.81	0.20	1.62	1.25	0.10	0.35	psb	rutile
18	12.6	56.1	25.2	1.62	0.78	0.20	1.89	1.30	0.11	0.35	psb	rutile
96	13.0	55.4	26.5	1.44	0.82	0.22	1.07	1.21	0.09	0.34	psb	rutile
40	13.3	55.9	25.7	1.43	0.78	0.20	1.07	1.21	0.10	0.36	psb	rutile
99	13.3	55.2	27.3	1.41	0.85	0.21	1.08	1.20	0.09	0.36	psb	rutile
36	14.3	55.4	25.7	1.41	0.79	0.19	1.08	1.21	0.10	0.36	psb	rutile
10	24.3	59.4	12.3	1.39	0.61	0.15	1.08	1.13	0.11	0.31	psb	ilmenite
7	27.2	59.4	9.0	1.53	0.62	0.19	1.17	1.16	0.11	0.31	psb	ilmenite



10 OUTSIDE - File CHRIS01-9 raw - Type 2 θ / θ locked - Start 15.000° - End 70.000° - Step 0.040° - Step time 1.5 s - Temp 25 °C (Room) Time Started 0 s - 2-Theta 15.000° - Theta 7.500°
372-0473 (C) - Annalcolite, syn, heated - Fe0.5Mg0.5Ti2O5 - Y 138.16% - d_x by 1 - WL 1.5406 - Orthorhombic - JIC PDF 2 - S-Q 79.8% -
29-0733 (*) - Ilmenite, syn - Fe2TiO3 - Y 26.70% - d_x by 1 - WL 1.5406 - Rhombohedral - JIC PDF 18 - S-Q 20.2% -



[A] 361 - File CHRIS013.raw - Type 2 θ / θ locked - Start 15.000° - End 70.000° - Step 0.040° - Step time 1.5 s - Temp 25 °C (Room) - Time Started 0 s - 2-Theta 15.000° - Theta 7.500° - Chi 0.00°
 [I] 72-0473 (C) - Annakolite, syn, heated - Fe_{0.5}Mg_{0.5}Ti₂O₅ - Y 104.16% - dx by 1 - vvl 15406 - Orthorhombic - Mc PDF 2 - S-Q 95.2%
 [I] 21-1276 (*) - Rutile, syn - TiO₂ - Y 8.88% - dx by 1 - vvl 15406 - Tetragonal - Mc PDF 34 - S-Q 4.8%



69 - File: CHRIS01-1 raw - Type: 2Th/Th locked - Start: 15.000° - End: 70.000° - Step: 0.040° - Step time: 1.5 s - Temp: 25 °C (Room) - Time Started: 0 s - 2-Theta: 15.000° - Theta: 7.500° - Chi: 0.00
72-0473 (C) - Armalcolite, syn, heated - Fe_{0.5}Mg_{0.5}Ti₂O₅ - Y: 100.00% - d x by 1. - WL: 1.5406 - Orthorhombic - I/c PDF 2 - S-Q 94.2% -
21-1276 (*) - Rutile, syn - TiO₂ - Y: 10.42% - d x by 1. - WL: 1.5406 - Tetragonal - I/c PDF 3.4 - S-Q 5.8% -