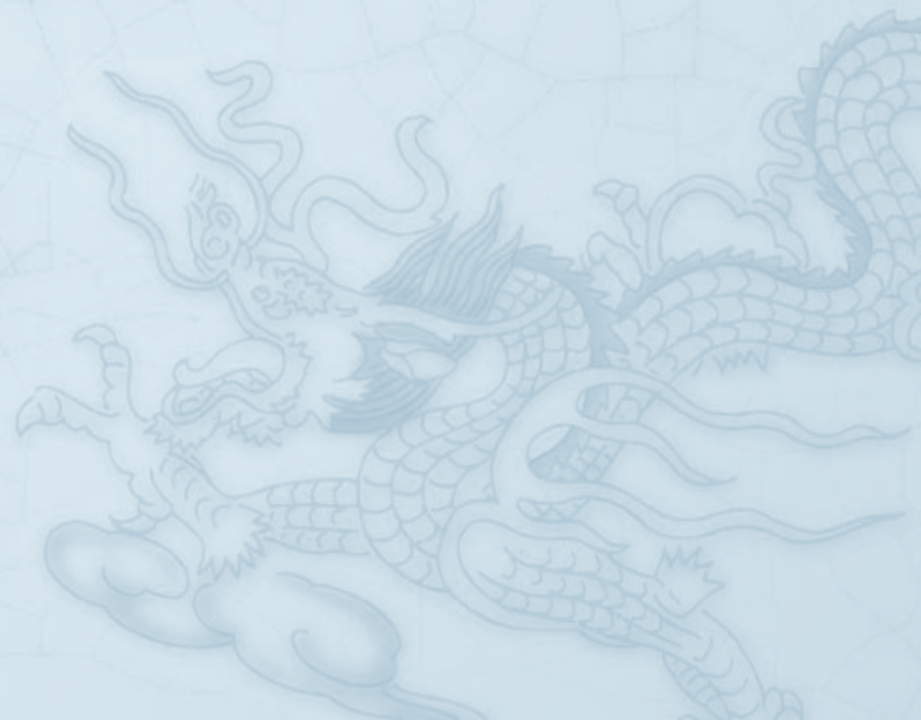
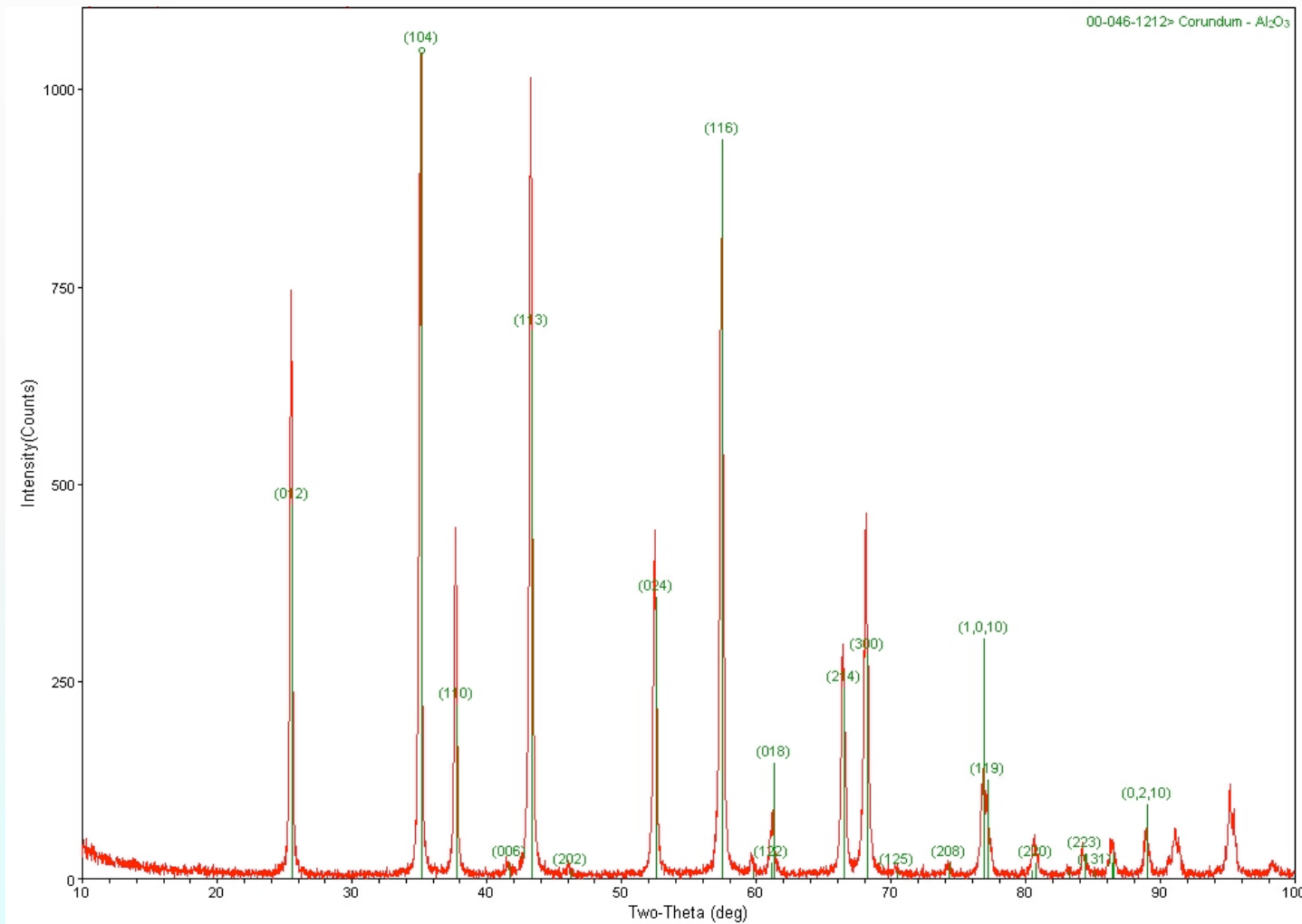


XRD DATA

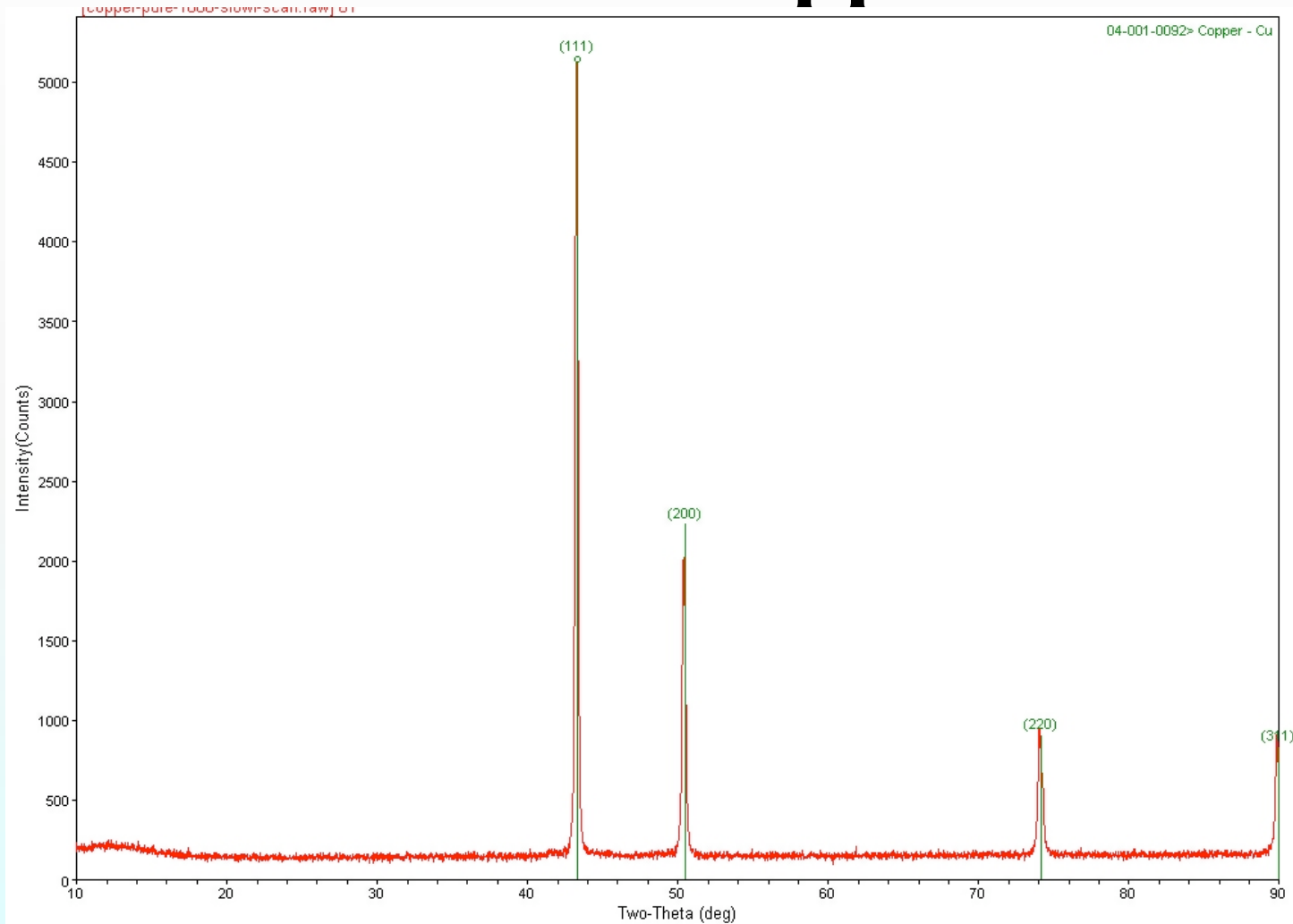
Lin Feng



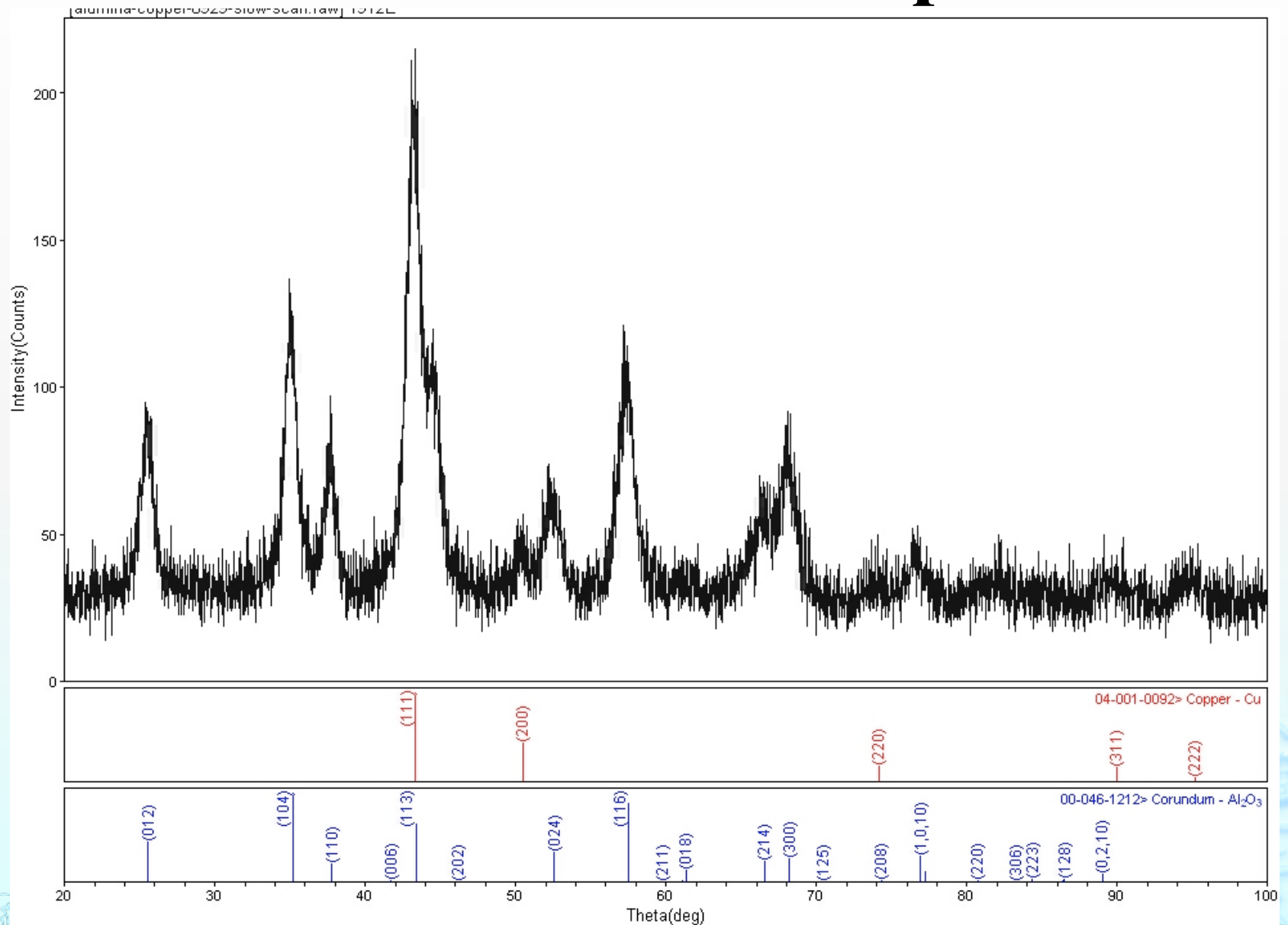
Pure Alumina



Pure Copper



Ball-Milled Sample



Quantitative Analysis

■ Copper - Cu <Wt%=4.5(1.0)>
■ Corundum - Al_2O_3 <Wt%=95.5(21.6)>

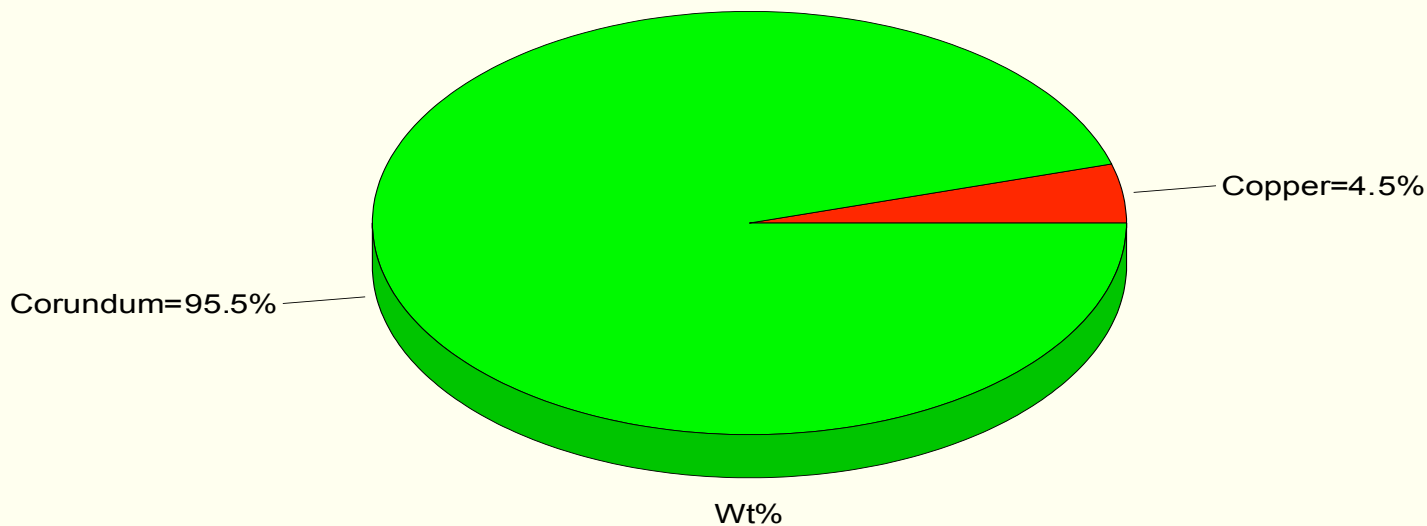


Table 1 Results from Peak Fit

	Cu	Al ₂ O ₃				
2-Theta	50.425	25.524	35.097	37.729	52.504	57.452
	50.523	25.483	35.098	37.730	52.414	57.324
d	1.8083	3.487	2.5547	2.3824	1.7415	1.6027
	1.8050	3.4926	2.5547	2.3823	1.7443	1.6060
Height	1568	530	744	332	340	668
	12	39	62	33	22	52
Area	20135	6312	9477	4263	5131	10259
	1065	2743	4327	1834	1784	4563
FWHM	0.200	0.173	0.192	0.188	0.212	0.223
	1.330	0.952	0.925	0.776	1.422	1.278
XS	806	1080	832	877	717	670
	69	91	96	117	64	74

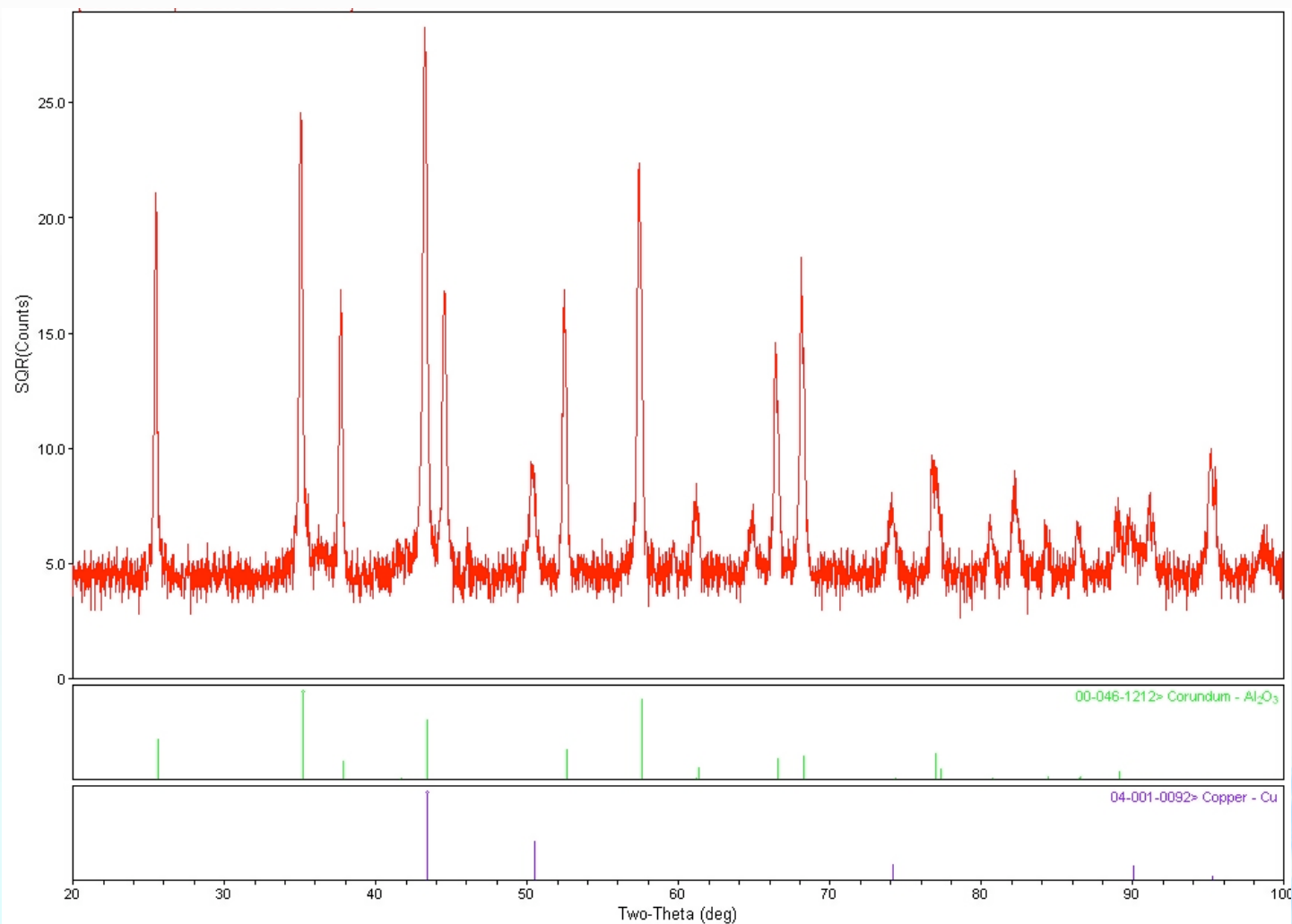
Table 2 Lattice Constant before and after ball milling

	Cu		Al ₂ O ₃	
Angstroms	Pure	Milled	Pure	Milled
A	3.6164	3.6101	4.7647	4.7780
B				
c			13.0334	12.9907

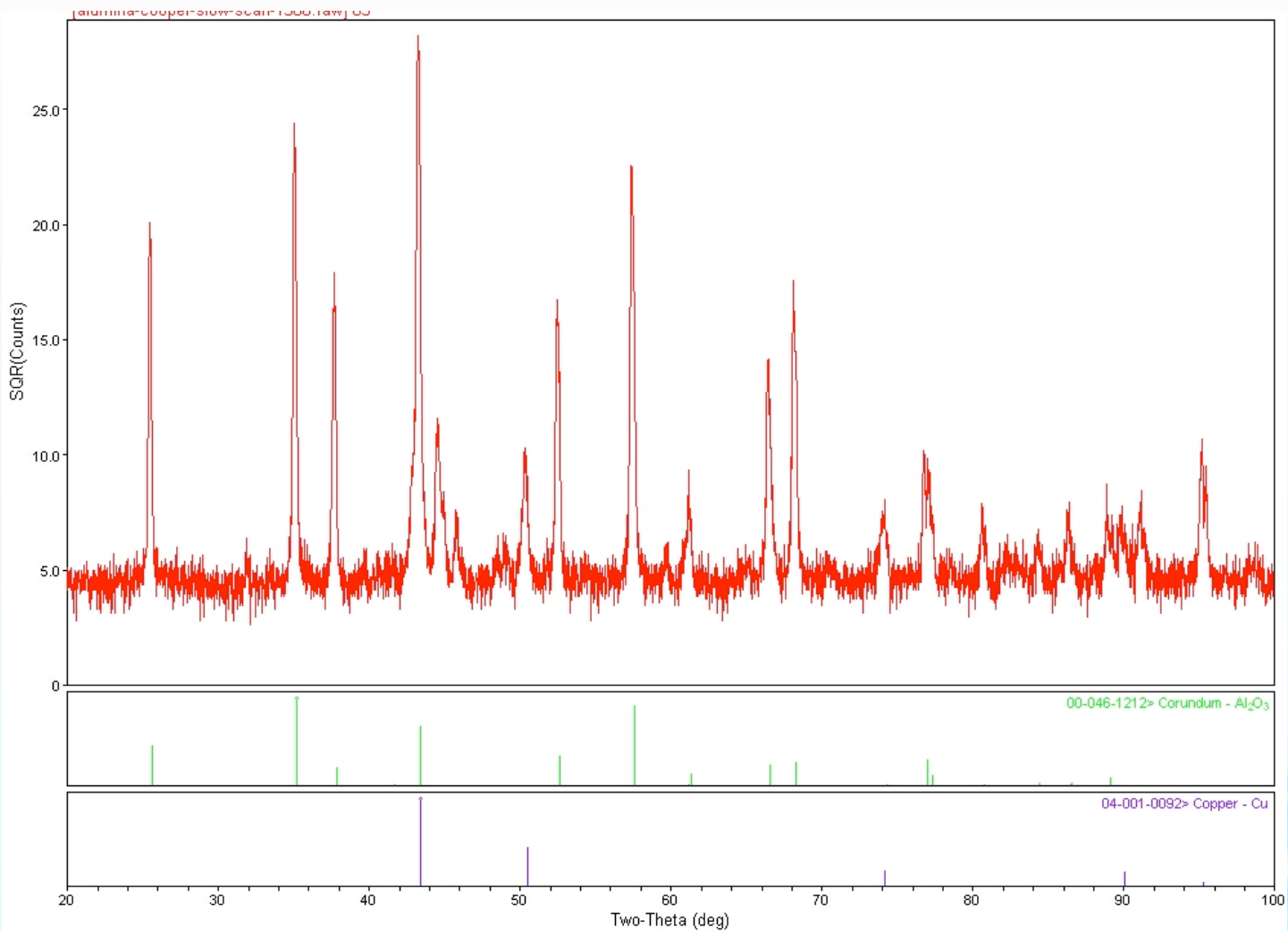
Table 3 Crystallite Size

	Cu		Al ₂ O ₃	
	Pure	Milled	Pure	Milled
Size Only Model	797	69	719	89
Williamson-Hall	3582		1863	165

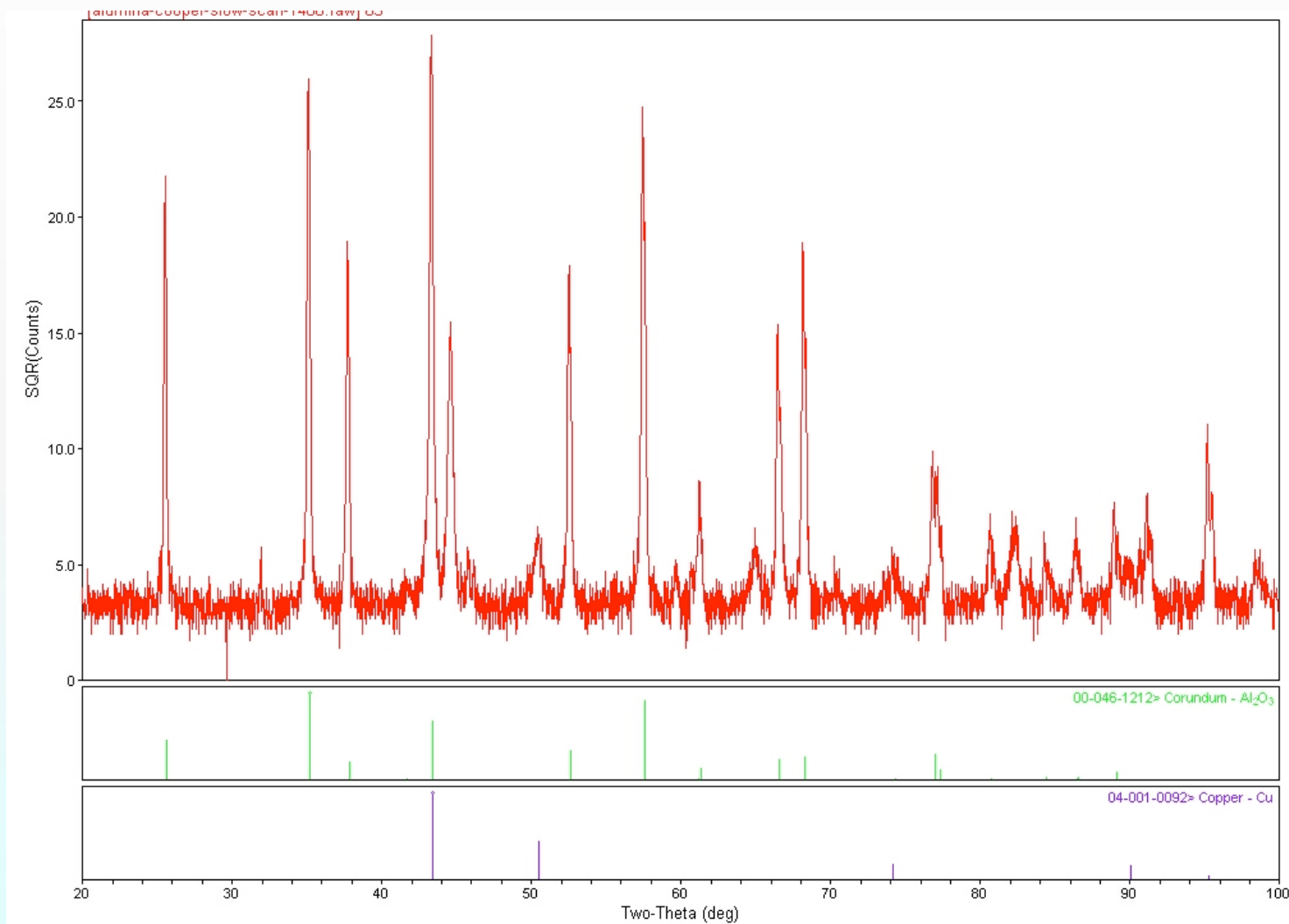
Sample Annealed at 1200°C



Sample Annealed at 1300°C



Sample Annealed at 1400°C



Sample Annealed at 1500°C

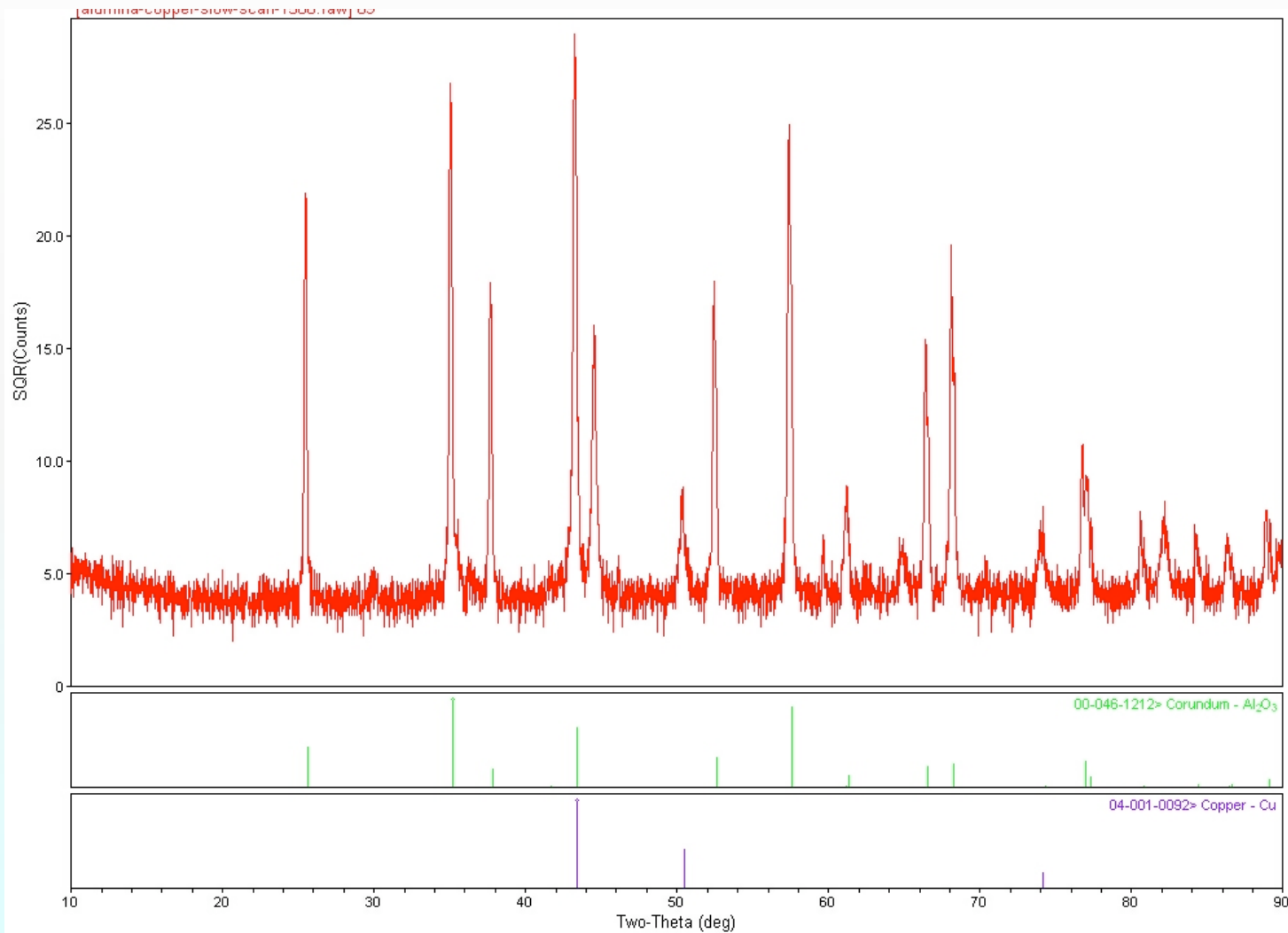


Table 4.1 Results from Peak Fit

	Cu		
2-Theta	1200°C	50.356	74.161
	1300°C	50.360	74.204
	1400°C	50.477	74.120
	1500°C	50.329	73.973
FWHM	1200°C	0.405	0.422
	1300°C	0.303	0.381
	1400°C	0.066	0.293
	1500°C	0.398	0.504
XS	1200°C	262	285
	1300°C	390	326
	1400°C	175	471
	1500°C	268	228

Table 4.2 Results from Peak Fit

	Al ₂ O ₃							
2-Theta	1200°C	25.515	35.082	37.726	52.501	57.452	66.474	68.169
	1300°C	25.497	35.074	37.726	52.484	57.438	66.480	68.162
	1400°C	25.566	35.138	37.776	52.547	57.492	66.501	68.203
	1500°C	25.513	35.091	37.736	52.498	57.449	66.475	68.165
FWHM	1200°C	0.178	0.194	0.195	0.212	0.229	0.214	0.223
	1300°C	0.186	0.198	0.202	0.197	0.211	0.191	0.194
	1400°C	0.160	0.170	0.178	0.179	0.182	0.186	0.174
	1500°C	0.147	0.160	0.146	0.169	0.177	0.166	0.179
XS	1200°C	994	810	815	722	638	768	717
	1300°C	887	777	753	840	750	992	966
	1400°C	1381	1141	1015	1074	1054	1065	1299
	1500°C	2018	1420	2150	1270	1137	1477	1194

Table 5 Lattice Constant for Annealed Samples

	Cu				Al ₂ O ₃			
T/ °C angstrom	1200	1300	1400	1500	1200	1300	1400	1500
A	3.6218	1.8090	3.6176	2.2865		4.7191	4.7111	4.7169
B								
c						4.5843	4.5958	4.5905

Table 6 Crystallite Size for Annealed Samples

	Cu				Al ₂ O ₃			
T/ °C angstrom	1200	1300	1400	1500	1200	1300	1400	1500
Size Only Model	261	289	189	256	801	868	1179	1435
Willia mson- Hall	287	252	86	463	1227	792	1355	2353