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APPENDICES

Appendix

Table 1 Operation of X-Ray photoelectron spectroscopy

No	Sample	E_{mss}	No scan	Dwell	Step size	Lens mode
1	**Oxidized - 450°C - 4hr**					
	Eb – 1100 – 0	50	2	50	1	LAXPS
	Cr – Eb – 579 – 570	50	10	100	0.1	LAXPS
	Fe_Eb_740-700	50	5	100	0.1	LAXPS
	O_Eb_545-525	50	5	100	0.1	LAXPS
	Ni_Eb_888-848	50	20	100	0.1	LAXPS
2	**Oxidized - 450°C - 6hr**					
	Eb – 1100 – 0	50	2	50	1	LAXPS
	Cr – Eb – 579 – 570	50	10	100	0.1	LAXPS
	Fe_Eb_740-700	50	5	100	0.1	LAXPS
	O_Eb_545-525	50	5	100	0.1	LAXPS
	Ni_Eb_888-848	50	20	100	0.1	LAXPS
3	**Oxidized - 450°C - 8hr**					
	Eb – 1100 – 0	50	2	50	1	LAXPS
	Cr – Eb – 579 – 570	50	10	100	0.1	LAXPS
	Fe_Eb_740-700	50	5	100	0.1	LAXPS
	O_Eb_545-525	50	5	100	0.1	LAXPS
	Ni_Eb_888-848	50	20	100	0.1	LAXPS
4	**Oxidized - 600°C - 6hr**					
	Eb – 1100 – 0	50	2	50	1	LAXPS
	Cr – Eb – 579 – 570	50	10	100	0.1	LAXPS
	Fe_Eb_740-700	50	5	100	0.1	LAXPS
	O_Eb_545-525	50	5	100	0.1	LAXPS
	Ni_Eb_888-848	50	20	100	0.1	LAXPS
5	**Oxidized - 800°C - 4hr**					
	Eb – 1100 – 0	50	2	50	1	LAXPS
	Cr – Eb – 579 – 570	50	10	100	0.1	LAXPS
	Fe_Eb_740-700	50	5	100	0.1	LAXPS
	O_Eb_545-525	50	5	100	0.1	LAXPS
	Ni_Eb_888-848	50	20	100	0.1	LAXPS
6	**Oxidized - 800°C - 6hr**					
	Eb – 1100 – 0	50	2	50	1	LAXPS
	Cr – Eb – 579 – 570	50	10	100	0.1	LAXPS
	Fe_Eb_740-700	50	5	100	0.1	LAXPS
	O_Eb_545-525	50	5	100	0.1	LAXPS
	Ni_Eb_888-848	50	20	100	0.1	LAXPS

7	**Oxidized - 800°C - 8hr**					
	Eb – 1100 – 0	50	2	50	1	LAXPS
	Cr – Eb – 579 – 570	50	10	100	0.1	LAXPS
	Fe_Eb_740-700	50	5	100	0.1	LAXPS
	O_Eb_545-525	50	5	100	0.1	LAXPS
	Ni_Eb_888-848	50	20	100	0.1	LAXPS

Table 2 Operation of X-Ray photoelectron spectroscopy (Cons.)

No	Sample	E_{mss}	No scan	Dwell	Step size	Lens mode
8	**Oxidized - 800°C - 12hr**	50	2	50	1	LAXPS
	Eb – 1100 – 0	50	10	100	0.1	LAXPS
	Cr – Eb – 579 – 570	50	5	100	0.1	LAXPS
	Fe_Eb_740-700	50	5	100	0.1	LAXPS
	O_Eb_545-525	50	20	100	0.1	LAXPS
	Ni_Eb_888-848					
9	**Cr Electroplsting Oxidized - 800°C - 12hr**	50	2	50	1	LAXPS
	Eb – 1100 – 0	50	10	100	0.1	LAXPS
	Cr – Eb – 579 – 570	50	5	100	0.1	LAXPS
	Fe_Eb_740-700	50	5	100	0.1	LAXPS
	O_Eb_545-525	50	20	100	0.1	LAXPS
	Ni_Eb_888-848					
10	**CrN**					
	CrN_Eb1100-O					
	CrN_Cr_ 595-570	50	20	100	0.1	LAXPS
	CrN_N	50	20	100	0.1	LAXPS

Table 3 shown that, elements percentage the surface of stainless steel.

Sample	Element	Area (N)
Oxidize 450°C 4 hr	Cr2p3	32.46
	Cr2p1	16.21
	Cr2p3	0.44
	Cr2p3	0.46
	Fe2p1	144.42
	Fe2p3	150.82
	O1s	1738.96
	O1s	1131.37

Cr	=	1.5417 %
Fe	=	9.1828 %
O	=	89.2754 %

Sample	Element	Area (N)
Oxidize 450°C 8 hr	Fe2p1	352.35
	Fe2p3	404.93
	Fe2p3	175.16
	Fe2p1	99.41
	Ni2p1	55.4
	Ni2p3	33.11
	Ni2p1	21.94
	O1s	2071.15
	O1s	2453.59
	Cr2p1	126.09
	Cr2p3	127.72

Cr	=	17.4273 %
Fe	=	1.8654 %
O	=	76.4204 %
Cr	=	4.2867 %

Sample	Element	Area (N)
Oxidize 450°C 8 hr	Cr2p1	242.12
	Cr2p3	273.56
	Cr2p1	5.13
	Fe2p1	151.44
	Fe2p3	205.33
	O1s	2945.55
	O1s	709.58

Cr	=	11.4900 %
Fe	=	7.8710 %
O	=	80.6389 %

Sample	Element	Area (N)
Oxidize 600°C 6 hr	Cr2p1	444.69
	Cr2p3	434.15
	Cr2p3	67.45
	Fe2p1	107.6
	Fe2p3	216.34
	Fe2p1	119.08
	O1s	4132.61
	O1s	715.12

Cr	=	15.1721 %
Fe	=	7.1030 %
O	=	77.7248 %

Sample	Element	Area (N)			
Oxidize 800°C 4 hr	Cr2p1	369.36	Cr	=	21.7084 %
	Cr2p3	419.36	Fe	=	10.0927 %
	Cr2p1	110.57	O	=	68.1988 %
	Cr2p3	138.02			
	Fe2p1	284.63			
	Fe2p3	197.64			
	O1s	2271.92			
	O1s	986.88			
Sample	Element	Area (N)	Cr	=	11.1356 %
Oxidize 800°C 6 hr	Cr2p1	191.61	Fe	=	18.7105 %
	Cr2p3	289.56	O	=	70.1538 %
	Cr2p1	17.73			
	Fe2p1	337.57			
	Fe2p3	299.04			
	Fe2p1	103.95			
	Fe2p3	97.71			
	O1s	2626.37			
	O1s	516.67			
Sample	Element	Area (N)	Cr	=	16.9307 %
Oxidize 800°C 8 hr	Cr2p1	383.44	Fe	=	8.4709 %
	Cr2p3	325.8	O	=	74.5982 %
	Cr2p3	66.91			
	Fe2p1	177.19			
	Fe2p3	211.14			
	O1s	1946.94			
	O1s	1472.83			
Sample	Element	Area (N)	Cr	=	7.9363 %
Oxidize 800°C 12 hr Non Coat Chromium by electro plating	Cr2p1	116.03	Fe	=	16.2153 %
	Cr2p3	150.09	O	=	75.8482 %
	Cr2p1	1.68			
	Cr2p1	1.17			
	Fe2p1	251.22			
	Fe2p3	298.33			
	O1s	1442.2			
	O1s	1128.35			
Sample	Element	Area (N)	Cr	=	23.5114 %
Oxidize 800°C 12 hr Coat Chromium by electro plating	Fe2p1	256.57	Fe	=	11.5552 %
	Fe2p3	214.04	O	=	64.9333 %
	O1s	1855.3			
	O1s	789.24			
	Cr2p1	466.95			
	Cr2p3	490.6			

Sample	Element	Area (N)
CrN	Cr1p1	2997.06
	Cr2p3	679.27
	Cr2p3	342.28
	N1s	1130.57
	N1s	210.28

Cr = 74.9816 %

N = 25.0183 %

Table 4 relationship between binding energy (eV) and residuals for Cr 450°C 4 hr

Binding energy	Residuals	Binding energy	Residuals	Binding energy	Residuals	Binding energy	Residuals	Binding energy	Residuals
595	14200.5	589.7	13589.4	584.4	13391.9	579.1	13619.9	573.8	13105.1
594.9	13927.2	589.6	13732.6	584.3	13376.6	579	13680.9	573.7	12916.9
594.8	13921.6	589.5	13780.4	584.2	13235	578.9	13656.6	573.6	13138.5
594.7	14239.1	589.4	13808	584.1	13307.9	578.8	13704.4	573.5	13137
594.6	14043.5	589.3	13708.4	584	13359.9	578.7	13884	573.4	12913.2
594.5	13920	589.2	13740.3	583.9	13204	578.6	13949.6	573.3	12947.5
594.4	13935.3	589.1	13668.5	583.8	13271.1	578.5	13911.7	573.2	13136.7
594.3	13776.4	589	13714.1	583.7	13416.6	578.4	13805.5	573.1	13165.4
594.2	13985.7	588.9	13957.5	583.6	13391	578.3	13790.9	573	12982.6
594.1	13932.9	588.8	13757.8	583.5	13512.6	578.2	13773.3	572.9	12971.1
594	14016.4	588.7	13810.9	583.4	13385.7	578.1	13724.8	572.8	12835.4
593.9	13832.7	588.6	13801.8	583.3	13429.3	578	13618.4	572.7	13041.7
593.8	13784	588.5	13783.7	583.2	13257	577.9	13898.5	572.6	13051.4
593.7	13830.9	588.4	13791.5	583.1	13192.1	577.8	13927.1	572.5	13026.4
593.6	13954.5	588.3	13771.8	583	13256.2	577.7	13964.5	572.4	12927.4
593.5	13882.9	588.2	13656.7	582.9	13261.2	577.6	14102.5	572.3	12965.4
593.4	13950.1	588.1	13687.4	582.8	13222.6	577.5	13999.5	572.2	12990.8
593.3	13875.3	588	13814.9	582.7	13182.6	577.4	13818.4	572.1	12937.2
593.2	13756.5	587.9	13897.5	582.6	13299.9	577.3	13760.8	572	12795.6
593.1	13788.3	587.8	13746.2	582.5	13212.5	577.2	13769.4	571.9	12904.7
593	13736.4	587.7	13826.8	582.4	13320.7	577.1	13697.4	571.8	13000
592.9	13753.8	587.6	13696.3	582.3	13431.4	577	13705.4	571.7	13057.1
592.8	13781.9	587.5	13673.7	582.2	13550.4	576.9	13571.4	571.6	12945.3
592.7	13802.1	587.4	13806.3	582.1	13311	576.8	13574.9	571.5	12889.9
592.6	13788.9	587.3	13814.1	582	13189.5	576.7	13662.4	571.4	12882.4
592.5	13703.5	587.2	13726.1	581.9	13173.9	576.6	13586	571.3	12945.7
592.4	13692.2	587.1	13754.3	581.8	13386.8	576.5	13558.4	571.2	12942
592.3	13721.8	587	13752.2	581.7	13376.7	576.4	13559.3	571.1	12873.4
592.2	13810.6	586.9	13695.7	581.6	13315.2	576.3	13402.7	571	12936.7
592.1	13884.2	586.8	13584.9	581.5	13353.1	576.2	13358.9	570.9	12948.9
592	13805.8	586.7	13597.3	581.4	13426.2	576.1	13187.3	570.8	12805.3
591.9	13734.4	586.6	13507.2	581.3	13444.8	576	13279.8	570.7	12886.6
591.8	13806	586.5	13628.4	581.2	13305.9	575.9	13227	570.6	12673.2
591.7	13765.1	586.4	13520	581.1	13253.7	575.8	13292.6	570.5	12772.1
591.6	13725.2	586.3	13661.5	581	13218.4	575.7	13368.9	570.4	12735.1
591.5	13836.3	586.2	13560.5	580.9	13273.4	575.6	13234.8	570.3	12880
591.4	13656.1	586.1	13362.5	580.8	13352.1	575.5	13109.5	570.2	12820.1
591.3	13819.4	586	13519.4	580.7	13399.1	575.4	13294.8	570.1	12708.4
591.2	13750.2	585.9	13423	580.6	13306.9	575.3	13184.1	570	12752.3
591.1	13624.6	585.8	13385	580.5	13354.5	575.2	13209.7	573.8	13105.1
591	13808.3	585.7	13391.2	580.4	13313.5	575.1	13122.2		
590.9	13860.1	585.6	13415.5	580.3	13350.9	575	13168.4		
590.8	13642.6	585.5	13367.4	580.2	13422.9	574.9	12917.9		
590.7	13772.5	585.4	13526.3	580.1	13506.9	574.8	13168.4		
590.6	13909	585.3	13380.6	580	13516.5	574.7	12980.3		
590.5	13668.9	585.2	13365.9	579.9	13611.6	574.6	13123.4		
590.4	13677.3	585.1	13437	579.8	13516	574.5	13022.8		
590.3	13668.3	585	13310.1	579.7	13555.8	574.4	13091.2		
590.2	13627.6	584.9	13332.4	579.6	13572.5	574.3	13082.4		
590.1	13784.1	584.8	13330.4	579.5	13602	574.2	13106.1		
590	13786.6	584.7	13371.9	579.4	13571.1	574.1	12909		
589.9	13818.6	584.6	13321.7	579.3	13535.8	574	13118.9		
589.8	13684.3	584.5	13348.9	579.2	13795.7	573.9	13051.4		

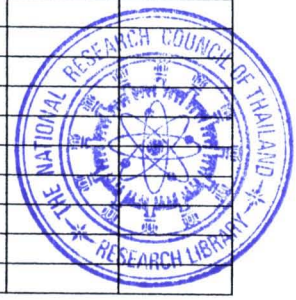

Table 5 relationship between binding energy (eV) and residuals for Fe 450°C, 4 hr

Binding energy	Residuals	Binding energy	Residuals	Binding energy	Residuals	Binding energy	Residuals	Binding energy	Residuals
740	32435.7	734.7	28867.5	729.4	27442.3	724.1	27290.8	718.8	25224.3
739.9	32489	734.6	28688.7	729.3	27397.8	724	27180.6	718.7	25345.3
739.8	32268.1	734.5	28633.3	729.2	27085.9	723.9	26874.1	718.6	25553
739.7	32130.6	734.4	28649.3	729.1	27067.8	723.8	26893.6	718.5	25444
739.6	32034.4	734.3	28764.3	729	27093.9	723.7	26807.8	718.4	25281.4
739.5	31666.3	734.2	28280.2	728.9	27052.9	723.6	26754.8	718.3	25300.6
739.4	31882.9	734.1	28159.4	728.8	27372.3	723.5	26835	718.2	25353.4
739.3	31756.6	734	28103.7	728.7	27060.7	723.4	26772.6	718.1	25239.2
739.2	31638.7	733.9	28194.2	728.6	26707.1	723.3	26336.9	718	25454.9
739.1	31947	733.8	28302.3	728.5	26963.7	723.2	26099.9	717.9	25417.8
739	31511.8	733.7	28099.1	728.4	26794.6	723.1	26248.8	717.8	25264.5
738.9	31567.6	733.6	27968.7	728.3	27156.3	723	26233.8	717.7	25149
738.8	31290.3	733.5	28090.5	728.2	27287.4	722.9	26129.4	717.6	25121.7
738.7	30930.2	733.4	28262.4	728.1	27260.9	722.8	26257.7	717.5	25017.8
738.6	31023.9	733.3	28039.6	728	27224.3	722.7	25864.2	717.4	25169.5
738.5	30909.8	733.2	27928.6	727.9	26902.5	722.6	25957.1	717.3	25076
738.4	30772.1	733.1	27730.3	727.8	27214.5	722.5	25979.3	717.2	25169.3
738.3	30966.5	733	28181.6	727.7	27273.4	722.4	26011.2	717.1	25241
738.2	30565.7	732.9	28079.4	727.6	27240.8	722.3	26046.6	717	25452.8
738.1	30504.5	732.8	27376.3	727.5	27307.6	722.2	26045.7	716.9	25148.2
738	30262.2	732.7	27620.5	727.4	27213.7	722.1	25965	716.8	25140.3
737.9	30416.5	732.6	27866.5	727.3	27255.6	722	25616.1	716.7	25428.2
737.8	30636.8	732.5	27607.2	727.2	27455.3	721.9	25509.3	716.6	25167.8
737.7	30408.8	732.4	27944.2	727.1	27157.1	721.8	25577.2	716.5	25131.8
737.6	30178.9	732.3	27769.3	727	27899.8	721.7	25748.5	716.4	25017.7
737.5	29889.8	732.2	27434.8	726.9	27786.8	721.6	25360.8	716.3	25212
737.4	29514.1	732.1	27231.2	726.8	27534.8	721.5	25605.7	716.2	25237.6
737.3	29632.8	732	27386.2	726.7	27631.9	721.4	25580.5	716.1	25399.8
737.2	29902.6	731.9	27455.5	726.6	27508.8	721.3	25686.5	716	25573.8
737.1	29638.9	731.8	27379.6	726.5	27265.6	721.2	25843.6	715.9	25386.5
737	29257.4	731.7	27584.4	726.4	27363.8	721.1	25796.7	715.8	25178.7
736.9	29810.7	731.6	27664	726.3	27529.5	721	25580.2	715.7	25214.3
736.8	29586.3	731.5	27420.6	726.2	27444.7	720.9	25249.6	715.6	25254.2
736.7	29560.5	731.4	27319.2	726.1	27665.6	720.8	25402.5	715.5	25585.2
736.6	29293.3	731.3	27367.1	726	27719.7	720.7	25308	715.4	25263.4
736.5	29308.9	731.2	26979.5	725.9	27948.7	720.6	25546.6	715.3	25273.9
736.4	29491.6	731.1	27362.2	725.8	27483.3	720.5	25453.7	715.2	25624.3
736.3	29308.1	731	27729.9	725.7	27666.6	720.4	25550.6	715.1	25345.5
736.2	29252.8	730.9	27242.5	725.6	27588.2	720.3	25819.5	715	25482.4
736.1	29056.4	730.8	27017.7	725.5	27563.7	720.2	25915.2	714.9	25174.3
736	29414.6	730.7	27104.5	725.4	27422	720.1	25648.4	714.8	25731
735.9	29213	730.6	27152.7	725.3	27708.2	720	25637.4	714.7	25935.1
735.8	29092	730.5	27052.9	725.2	27539.7	719.9	25579.2	714.6	25664.1
735.7	28880	730.4	27228.2	725.1	27573.4	719.8	25477.3	714.5	25496.3
735.6	28759.1	730.3	27171.8	725	27784.5	719.7	25224.7	714.4	26009.6
735.5	29020.1	730.2	27059.9	724.9	27574.3	719.6	25333.6	714.3	26071.1
735.4	28925.7	730.1	27136.1	724.8	27820.8	719.5	25641.6	714.2	26388.6
735.3	28990.8	730	27429.8	724.7	27667.8	719.4	25549.4	714.1	26078.1
735.2	28993.3	729.9	27465.9	724.6	27476	719.3	25363.1	714	26148.5
735.1	28526.1	729.8	27237.3	724.5	27760.4	719.2	25435.1	713.9	26161.3
735	28325.8	729.7	26739.9	724.4	27378.6	719.1	25444	713.8	26170
734.9	28672.6	729.6	27137.1	724.3	27389.8	719	25532.7	713.7	26060.3
734.8	28627	729.5	27526.3	724.2	27341.6	718.9	25654.8	713.6	26280.4

Table 5 (continued) relationship between binding energy (eV) and residuals for Fe 450°C, 4 hr cons.

Binding energy	Residuals	Binding energy	Residuals	Binding energy	Residuals
713.5	26474.9	708.2	22815.7	703	22312.1
713.4	26142.7	708.1	22330.8	702.9	22517
713.3	26437.7	708	22557.7	702.8	22635.8
713.2	26690.6	707.9	22501.8	702.7	22535.6
713.1	26435.3	707.8	22367.3	702.6	22537.9
713	26605	707.7	22626.6	702.5	22378.5
712.9	26798.2	707.6	22594.3	702.4	22376.8
712.8	26981.4	707.5	22515.8	702.3	22478.6
712.7	26909.7	707.4	22673.5	702.2	22372.6
712.6	26823.1	707.3	22614.2	702.1	22338.5
712.5	27335.8	707.2	22473.5	702	22387.8
712.4	27451.5	707.1	22489.7	701.9	22053.4
712.3	26946.6	707	22200.5	701.8	22123.9
712.2	26989.4	706.9	22274.8	701.7	22351.8
712.1	27001	706.8	22626.2	701.6	22343.6
712	27108.3	706.7	22535.2	701.5	22216.3
711.9	27333.8	706.6	22420.2	701.4	22096.8
711.8	27321.4	706.5	22526.9	701.3	22048.9
711.7	27041.1	706.4	22403.2	701.2	22149.3
711.6	27334.5	706.3	22616.1	701.1	22131.9
711.5	27101.7	706.2	22265.6	701	22299.9
711.4	27200.3	706.1	22337.8	700.9	22206.4
711.3	27301.9	706	22647.7	700.8	22054.1
711.2	27324.3	705.9	22687.7	700.7	22164.9
711.1	26512.7	705.8	22591.9	700.6	22326.7
711	26421.4	705.7	22319	700.5	22240.2
710.9	26635.5	705.6	22400.4	700.4	21995.3
710.8	26747.7	705.5	22510.7	700.3	22001
710.7	26552.5	705.4	22462.9	700.2	22159.2
710.6	26431.8	705.3	22632.4	700.1	21980.9
710.5	26289.9	705.2	22620.2	700	21939.1
710.4	26112.9	705.1	22595.3		
710.3	25754.5	705	22372.5		
710.2	25405.4	704.9	22372.4		
710.1	25530.2	704.8	22450.5		
710	24941.9	704.7	22424.6		
709.9	24647	704.6	22724.6		
709.8	24693.8	704.5	22505.3		
709.7	24740	704.4	22163.7		
709.6	24621.6	704.3	22469.2		
709.5	24101.3	704.2	22438.1		
709.4	23703.3	704.1	22665.8		
709.3	23718	704	22511.6		
709.2	23340.9	703.9	22416.8		
709.1	23504.2	703.8	22371.8		
709	23882.1	703.7	22350.4		
708.9	23033.2	703.6	22565.9		
708.8	22943.3	703.5	22737.5		
708.7	22796.3	703.4	22709.8		
708.6	22516.8	703.3	22825.6		
708.5	22652.8	703.2	22610		
708.4	22457	703.1	22311.6		
708.3	22992.8	708.2	22815.7		

Table 6 relationship between binding energy (eV) and residuals for Cr 450°C, 6 hr.

Binding energy	Residuals	Binding energy	Residuals	Binding energy	Residuals	Binding energy	Residuals	Binding energy	Residuals
595	26044.1	589.7	25614.1	584.4	24226.5	579.1	25233.7	573.8	23507.4
594.9	26137.8	589.6	25424.7	584.3	24036.6	579	25306.2	573.7	23484.8
594.8	26355	589.5	25528.7	584.2	24197.5	578.9	25523.2	573.6	23539.8
594.7	26222.2	589.4	25632.1	584.1	24264.5	578.8	25352.3	573.5	23676.9
594.6	26027.6	589.3	25478.1	584	24135.9	578.7	25481.8	573.4	23863.8
594.5	25923.3	589.2	25664.2	583.9	24244	578.6	25638.6	573.3	23797.6
594.4	25821.5	589.1	25711.5	583.8	24520.4	578.5	25727.4	573.2	23652.7
594.3	26011.5	589	25595	583.7	24069.3	578.4	25800.4	573.1	23607.6
594.2	25809.4	588.9	25561.9	583.6	24259.6	578.3	25756.9	573	23632.2
594.1	25807.1	588.8	25432.8	583.5	24117.8	578.2	25561.7	572.9	23772.6
594	25748.7	588.7	25638.5	583.4	24071.3	578.1	25838.7	572.8	23504.2
593.9	25892.7	588.6	25589.7	583.3	24129.6	578	25578.8	572.7	23586.7
593.8	25889.4	588.5	25694	583.2	24319.4	577.9	25984.7	572.6	23416.4
593.7	25849.6	588.4	25597.8	583.1	24197.5	577.8	25997.1	572.5	23493.7
593.6	25790.4	588.3	25604.5	583	24091.8	577.7	25885.1	572.4	23522.1
593.5	25864	588.2	25647.8	582.9	24150.1	577.6	25903.1	572.3	23778.5
593.4	25697	588.1	25476.7	582.8	24158.7	577.5	26043.5	572.2	23502.1
593.3	25621.6	588	25448.6	582.7	24000.4	577.4	25785.7	572.1	23360.9
593.2	25443.2	587.9	25514.9	582.6	24182.2	577.3	25363.4	572	23550.6
593.1	25671.1	587.8	25780.9	582.5	24101.9	577.2	25499.7	571.9	23278.4
593	25783.1	587.7	25625.9	582.4	24136.2	577.1	25492.2	571.8	23472.7
592.9	25742.7	587.6	25553.6	582.3	24175.8	577	25347	571.7	23433.7
592.8	25537.7	587.5	25552.1	582.2	24133	576.9	25363.6	571.6	23580.1
592.7	25692.5	587.4	25242.4	582.1	24283	576.8	25478.5	571.5	23375.1
592.6	25684.5	587.3	25361.5	582	24206.4	576.7	25334.1	571.4	23494.1
592.5	25742.7	587.2	25391.1	581.9	24259.9	576.6	25165.8	571.3	23491.5
592.4	25844.3	587.1	25512.7	581.8	24246.8	576.5	25130.7	571.2	23347.9
592.3	25642.6	587	25283.7	581.7	24256.3	576.4	24817.6	571.1	23200.7
592.2	25709.4	586.9	25455.3	581.6	24274.3	576.3	24634.3	571	23287.1
592.1	25616.4	586.8	25391.4	581.5	24432.7	576.2	24684.4	570.9	23389
592	25683.6	586.7	25180	581.4	24505.6	576.1	24471.2	570.8	23555.8
591.9	25683.5	586.6	25148.9	581.3	24478.6	576	24564.4	570.7	23670.2
591.8	25452.3	586.5	24978.7	581.2	24381.5	575.9	24487.6	570.6	23470.5
591.7	25181.1	586.4	24668.8	581.1	24338.9	575.8	24345.5	570.5	23309.2
591.6	25354.2	586.3	24848.3	581	24274.1	575.7	24474.9	570.4	23233.2
591.5	25569.8	586.2	24714.2	580.9	24325.3	575.6	24438.1	570.3	23247.5
591.4	25438.7	586.1	24878.3	580.8	24495.9	575.5	23941.9	570.2	23304
591.3	25646.5	586	25079.2	580.7	24337.9	575.4	24016	570.1	23417.2
591.2	25582.6	585.9	24847.1	580.6	24317	575.3	23912.1	570	23317.2
591.1	25535.3	585.8	24712.1	580.5	24526	575.2	24021		
591	25221.3	585.7	24394.5	580.4	24568.7	575.1	23927.1		
590.9	25464.2	585.6	24459.6	580.3	24659.8	575	23971.6		
590.8	25484.6	585.5	24725.6	580.2	24606.2	574.9	23801.4		
590.7	25323.9	585.4	24517.6	580.1	24885.8	574.8	23893.6		
590.6	25517.5	585.3	24526.1	580	24858.9	574.7	23768.7		
590.5	25589.4	585.2	24525.3	579.9	24884.3	574.6	23658.1		
590.4	25402.5	585.1	24407.7	579.8	24785.2	574.5	23941.6		
590.3	25300.9	585	24345.1	579.7	24736.8	574.4	23834.3		
590.2	25477.5	584.9	24516.9	579.6	25011.7	574.3	23750.4		
590.1	25480.1	584.8	24206	579.5	24978.5	574.2	23588.3		
590	25474.4	584.7	24231.2	579.4	25064.3	574.1	23667.7		
589.9	25349.7	584.6	24368.9	579.3	25197.1	574	23656.7		
589.8	25426.3	584.5	24406.8	579.2	25243.8	573.9	23555.3		

Table 7 relationship between binding energy (eV) and residuals for Fe 450°C, 6 hr

Binding energy	Residuals	Binding energy	Residuals	Binding energy	Residuals	Binding energy	Residuals	Binding energy	Residuals
740	69903.4	734.7	62164.6	729.4	59091.4	724.1	60025.3	718.8	55554
739.9	69685	734.6	62494.7	729.3	58985.2	724	59587.1	718.7	55060.1
739.8	69418.6	734.5	61874.7	729.2	58923.5	723.9	59792.7	718.6	54989.3
739.7	69670.1	734.4	61862.9	729.1	58487.2	723.8	59597.5	718.5	54518.3
739.6	68965.6	734.3	62310.9	729	58712.4	723.7	59887.1	718.4	54572.3
739.5	68379.6	734.2	61907	728.9	58941.2	723.6	58849.7	718.3	54809.5
739.4	68001.5	734.1	61342.1	728.8	59362	723.5	58481.9	718.2	54862
739.3	68448.5	734	61741.2	728.7	59062.9	723.4	58171.4	718.1	54296
739.2	67881.5	733.9	61861.4	728.6	58576.9	723.3	58240.7	718	54315.3
739.1	67401.4	733.8	61806.2	728.5	59224.2	723.2	58357.1	717.9	54370.6
739	67150.5	733.7	61326.4	728.4	58540.4	723.1	57956.1	717.8	54659.4
738.9	67017.4	733.6	61481.3	728.3	58865.4	723	57716.9	717.7	54238.7
738.8	66998.9	733.5	61614.1	728.2	59309.5	722.9	57491.9	717.6	54482.9
738.7	66521.5	733.4	60847.2	728.1	59093.4	722.8	57185.6	717.5	54068
738.6	66308.6	733.3	61001	728	59324.2	722.7	56936.5	717.4	54381.7
738.5	66113.6	733.2	60767	727.9	59614.1	722.6	56655.8	717.3	54112.8
738.4	65866.4	733.1	60951.8	727.8	59475	722.5	57482.3	717.2	54729.8
738.3	65759	733	60932.1	727.7	59150.8	722.4	56279.2	717.1	54555.1
738.2	65608.3	732.9	60780.5	727.6	59173.4	722.3	56532	717	53856.4
738.1	65245.8	732.8	60811.9	727.5	59422.3	722.2	56214.9	716.9	53971.4
738	65665.5	732.7	60630.7	727.4	59699.9	722.1	56116.8	716.8	54194.4
737.9	64795.8	732.6	60285.4	727.3	59948.1	722	56369.2	716.7	54375.9
737.8	64522.6	732.5	60072	727.2	59815.9	721.9	56080.8	716.6	54375.2
737.7	64660.7	732.4	60106.2	727.1	60227.5	721.8	55588.1	716.5	53985.4
737.6	64385.7	732.3	59914.4	727	59998.8	721.7	55257.2	716.4	54207.3
737.5	64426.3	732.2	59725.7	726.9	59685.4	721.6	54848.6	716.3	54282.1
737.4	64216.4	732.1	59841.2	726.8	60201.1	721.5	55614	716.2	54503.7
737.3	63966.8	732	60291.2	726.7	60717.4	721.4	55673.6	716.1	54290.9
737.2	63933	731.9	59819.6	726.6	60526.1	721.3	54933.3	716	54422.2
737.1	63633.7	731.8	59660.8	726.5	60303.7	721.2	55587.8	715.9	54826.8
737	63550.7	731.7	59379.1	726.4	60289.3	721.1	55535.5	715.8	54631.8
736.9	63851.1	731.6	59400.8	726.3	60520.7	721	55585	715.7	54827.3
736.8	63658.3	731.5	59580.7	726.2	60603.7	720.9	54875	715.6	54981.2
736.7	63754.7	731.4	59824.5	726.1	60562.9	720.8	54985.8	715.5	54826.9
736.6	63010.8	731.3	59697.7	726	60519	720.7	55046.2	715.4	54461
736.5	62501.9	731.2	59529.2	725.9	60320.7	720.6	55484.7	715.3	55326.7
736.4	63074	731.1	59906.3	725.8	60701.9	720.5	55698	715.2	55520
736.3	62695.9	731	59206.9	725.7	60910	720.4	55345	715.1	55412.6
736.2	62616.1	730.9	58787.6	725.6	60648.8	720.3	55795.7	715	55473.4
736.1	62458.8	730.8	58785.2	725.5	61077.4	720.2	55777.4	714.9	55578.8
736	62854.2	730.7	58698	725.4	61263.3	720.1	55446.9	714.8	55476.7
735.9	62314.3	730.6	58999.4	725.3	60999	720	55737.8	714.7	55242.1
735.8	62658.3	730.5	59190.2	725.2	61173.2	719.9	55605.4	714.6	55465.1
735.7	62797.1	730.4	58919.2	725.1	60912.2	719.8	56221.9	714.5	56024.5
735.6	62677.2	730.3	58521.7	725	60701.4	719.7	55871.3	714.4	56169.7
735.5	62639.4	730.2	58632.8	724.9	60464.5	719.6	55384.3	714.3	56510.5
735.4	62465.9	730.1	58384.5	724.8	60693.4	719.5	55138.2	714.2	56085
735.3	62263.7	730	58559.4	724.7	60432.6	719.4	55223.4	714.1	56991
735.2	62318.1	729.9	58768	724.6	60780.2	719.3	55388	714	57250.1
735.1	62183.8	729.8	58867.5	724.5	60092.6	719.2	55526.3	713.9	56901.8
735	61665.5	729.7	59398.3	724.4	60606.5	719.1	55443.4	713.8	56704.5
734.9	61956.1	729.6	58957.7	724.3	60504.8	719	55195.5	713.7	57305.3
734.8	61766.1	729.5	58928.8	724.2	60014	718.9	55194.2	713.6	57402.8

Table 7 (continued) relationship between binding energy (eV) and residuals for Fe 450°C, 6 hr.

Binding energy	Residuals	Binding energy	Residuals	Binding energy	Residuals
713.5	57345.1	708.2	47182.9	702.9	46781.2
713.4	57774.7	708.1	47448.7	702.8	46383.6
713.3	58014	708	46812.5	702.7	46299.4
713.2	58146.2	707.9	47112.5	702.6	46502.9
713.1	58222	707.8	46844.9	702.5	46714.4
713	58111.1	707.7	47102	702.4	46661.3
712.9	58589.9	707.6	46629.4	702.3	46717.8
712.8	58940.3	707.5	46278.3	702.2	46392.4
712.7	59689	707.4	46490.8	702.1	46269.1
712.6	59373.1	707.3	46936.5	702	46548.3
712.5	59763.4	707.2	47057.8	701.9	46876.2
712.4	59890.2	707.1	46564.5	701.8	46460.2
712.3	60135.6	707	46789.5	701.7	45825.9
712.2	60141.9	706.9	46782.2	701.6	46150.8
712.1	60283.3	706.8	46687	701.5	46208.7
712	60348.1	706.7	46759.6	701.4	46087
711.9	59919.1	706.6	46600.9	701.3	45867.3
711.8	60941.1	706.5	46618.1	701.2	46351.6
711.7	60847.9	706.4	47101.9	701.1	46239.9
711.6	61119.4	706.3	46595.8	701	45873.2
711.5	60903.2	706.2	46255	700.9	45938.6
711.4	60612.1	706.1	46369.8	700.8	46225.7
711.3	60917.4	706	47050	700.7	46025.5
711.2	60895	705.9	47167.3	700.6	45575.1
711.1	60561.9	705.8	47061.1	700.5	45666.4
711	60485.3	705.7	46954.4	700.4	45298
710.9	60217.1	705.6	47090.4	700.3	45639.2
710.8	59383.3	705.5	46735.9	700.2	45505.7
710.7	59079	705.4	46210.6	700.1	45542.3
710.6	58826.9	705.3	46469.3	700	45241
710.5	58279.6	705.2	46589.6		
710.4	57901.8	705.1	46512.9		
710.3	57269.2	705	46955.6		
710.2	56887.6	704.9	46500.3		
710.1	56158.2	704.8	46591.1		
710	55384.2	704.7	46545.8		
709.9	54791.4	704.6	46793.8		
709.8	54078.3	704.5	46675		
709.7	53758	704.4	46177.1		
709.6	52724.3	704.3	46474.6		
709.5	51887.7	704.2	46952.7		
709.4	51386	704.1	46911.5		
709.3	51104.2	704	46747.3		
709.2	50485.9	703.9	46646.8		
709.1	49655.9	703.8	46466.7		
709	49386.7	703.7	46640.8		
708.9	48778	703.6	46593		
708.8	48903	703.5	46350.4		
708.7	48892.3	703.4	46474.7		
708.6	48374.7	703.3	46329.4		
708.5	47796	703.2	46536.6		
708.4	47754.7	703.1	46792.8		
708.3	47698.6	703	46886.8		

Table 8 relationship between binding energy (eV) and residuals for Cr 450°C, 8 hr

Binding energy	Residuals	Binding energy	Residuals	Binding energy	Residuals	Binding energy	Residuals	Binding energy	Residuals
595	18255.3	589.7	18540	584.4	17258.7	579.1	19182.2	573.8	15477.6
594.9	18213	589.6	18579.6	584.3	17274.6	579	19503	573.7	15634
594.8	18119.6	589.5	18545.7	584.2	17207.7	578.9	19599.5	573.6	15677.7
594.7	18143.9	589.4	18517.3	584.1	17179.8	578.8	19538	573.5	15591.7
594.6	18126.1	589.3	18462.6	584	17113	578.7	20041.2	573.4	15606.5
594.5	18254.5	589.2	18680.5	583.9	17122.6	578.6	20291.2	573.3	15596.5
594.4	18030.1	589.1	18855.6	583.8	17107.5	578.5	20214.3	573.2	15485.1
594.3	18222	589	18937.4	583.7	17031.4	578.4	20264.6	573.1	15497.8
594.2	18129.3	588.9	18846.7	583.6	16972.4	578.3	20322.3	573	15579.5
594.1	18040.8	588.8	19096.6	583.5	16858.4	578.2	20443	572.9	15463.6
594	18354.9	588.7	19157.3	583.4	16813.7	578.1	20774	572.8	15368.6
593.9	18211.4	588.6	19119.6	583.3	17008.2	578	20918	572.7	15692.5
593.8	18103.4	588.5	19109.8	583.2	17014.8	577.9	20865.9	572.6	15531.5
593.7	18024.9	588.4	19138.7	583.1	16971	577.8	20720.9	572.5	15535.5
593.6	18041.9	588.3	19341.1	583	16958.8	577.7	20841.1	572.4	15567.4
593.5	18102.3	588.2	19329.9	582.9	17030.9	577.6	20870.3	572.3	15610.5
593.4	18026.2	588.1	19411.8	582.8	17127	577.5	20921.6	572.2	15574.9
593.3	18159.1	588	19328.7	582.7	16980.8	577.4	20824.8	572.1	15465.1
593.2	18094.2	587.9	19417.1	582.6	17006.7	577.3	20696.9	572	15494.8
593.1	18048	587.8	19478	582.5	16986	577.2	20474.9	571.9	15478.6
593	18015.1	587.7	19407	582.4	17007.4	577.1	20237.3	571.8	15337.4
592.9	17950.1	587.6	19457.5	582.3	17186.5	577	20170.3	571.7	15282.8
592.8	18072.8	587.5	19651.2	582.2	16934.5	576.9	20088.6	571.6	15609.7
592.7	18064.5	587.4	19533.7	582.1	16935.3	576.8	19892.8	571.5	15337.8
592.6	18024.8	587.3	19393.1	582	17126.4	576.7	19343	571.4	15407
592.5	17988.9	587.2	19626.5	581.9	17260.7	576.6	19338.5	571.3	15396.7
592.4	17891.6	587.1	19600.1	581.8	17062.1	576.5	19011.7	571.2	15520.6
592.3	18025.8	587	19522.8	581.7	17204.8	576.4	18612.3	571.1	15407.7
592.2	17937.3	586.9	18926.3	581.6	17332.8	576.3	18415.9	571	15339.1
592.1	17962.5	586.8	19135.7	581.5	17033	576.2	18315.4	570.9	15369.4
592	18077.6	586.7	19052.1	581.4	17052.8	576.1	18108.3	570.8	15488.4
591.9	18088.2	586.6	18852.1	581.3	17161.4	576	17768.7	570.7	15498.8
591.8	18066.7	586.5	18879.6	581.2	17150.2	575.9	17545.9	570.6	15505.7
591.7	17958.6	586.4	18719.2	581.1	17209.5	575.8	17539.1	570.5	15505.6
591.6	17908.9	586.3	18564	581	17298.9	575.7	17147.3	570.4	15477.4
591.5	17910.3	586.2	18668.6	580.9	17402.9	575.6	17032.3	570.3	15710.3
591.4	17905.3	586.1	18549.4	580.8	17305.3	575.5	16796.2	570.2	15617.6
591.3	17899.6	586	18276.2	580.7	17263.7	575.4	16671.6	570.1	15591.7
591.2	18034.3	585.9	18207.5	580.6	17374	575.3	16544.8	570	15635.6
591.1	17992.7	585.8	18257.8	580.5	17686.3	575.2	16307.9		
591	18231.1	585.7	18307.8	580.4	17661.3	575.1	16169.6		
590.9	18084.1	585.6	17960.6	580.3	17800.4	575	16201.2		
590.8	18124.8	585.5	17909.7	580.2	17854	574.9	15894.4		
590.7	18046.4	585.4	17815.4	580.1	17820.5	574.8	15917.4		
590.6	18114.7	585.3	17776.3	580	17979.4	574.7	16075.8		
590.5	18418	585.2	17607.7	579.9	17887.5	574.6	16010.4		
590.4	18107.6	585.1	17486.2	579.8	18028.4	574.5	15904.3		
590.3	18252	585	17518.6	579.7	18360.2	574.4	15765.6		
590.2	18086.6	584.9	17199.3	579.6	18475.8	574.3	15830.9		
590.1	18210.2	584.8	17399.8	579.5	18561.9	574.2	15818.3		
590	18432.2	584.7	17420.5	579.4	18950.2	574.1	15677.8		
589.9	18573.3	584.6	17094.6	579.3	18924.1	574	15571.9		
589.8	18303.8	584.5	17192.5	579.2	18983.4	573.9	15482.8		

Table 9 relationship between binding energy (eV) and residuals for Fe 450°C, 8 hr

Binding energy	Residuals	Binding energy	Residuals	Binding energy	Residuals	Binding energy	Residuals	Binding energy	Residuals
740	43841.4	734.7	38261.3	729.4	36367.6	724.1	35760.5	718.8	32872.2
739.9	43769.1	734.6	38059.9	729.3	36259.9	724	35393.2	718.7	32477.4
739.8	43817.5	734.5	37899.7	729.2	36328	723.9	35884.5	718.6	32863.5
739.7	43310.2	734.4	37945.4	729.1	36675.9	723.8	35804.7	718.5	33038.8
739.6	43066.8	734.3	37639.9	729	36634.5	723.7	35533.3	718.4	32922.5
739.5	42963.5	734.2	37631.3	728.9	36217.9	723.6	35268.3	718.3	32895.5
739.4	42655	734.1	37749.8	728.8	36144.6	723.5	34940	718.2	32878.4
739.3	42360.5	734	37622	728.7	36260.8	723.4	35148.9	718.1	32647.1
739.2	42489.3	733.9	37580.5	728.6	36347.7	723.3	34833.1	718	32974.3
739.1	42450.3	733.8	37542.9	728.5	36172.5	723.2	34654.7	717.9	32684.4
739	42256.3	733.7	37683.2	728.4	36208.2	723.1	34449.4	717.8	33185.2
738.9	42065.4	733.6	37522.3	728.3	36657.9	723	34896	717.7	32410.9
738.8	41738.6	733.5	37295.1	728.2	36465.4	722.9	34201.1	717.6	32085.2
738.7	41554.9	733.4	37348.8	728.1	36144.5	722.8	34280.8	717.5	32681.7
738.6	41702.3	733.3	37316.6	728	36181.2	722.7	34273.1	717.4	32808.9
738.5	41363	733.2	37337.7	727.9	36725.5	722.6	34124.1	717.3	33055.1
738.4	40900.1	733.1	37484.1	727.8	36308.8	722.5	34464.6	717.2	32581.6
738.3	41433.9	733	37066.3	727.7	36630.7	722.4	34191.1	717.1	32261.5
738.2	41555.9	732.9	36793.3	727.6	36472.2	722.3	33798.6	717	32489.8
738.1	41278	732.8	37317	727.5	36636.6	722.2	33688	716.9	32858.4
738	41203.5	732.7	37474.6	727.4	36693.9	722.1	33735.9	716.8	32904.1
737.9	40678.8	732.6	37078.7	727.3	36597	722	33388.2	716.7	32613.2
737.8	40409.6	732.5	37147.7	727.2	36822.7	721.9	33467	716.6	32551.6
737.7	40083.2	732.4	36887.4	727.1	36587.3	721.8	33586.8	716.5	32658.2
737.6	40403.2	732.3	37139.9	727	36990.4	721.7	33794	716.4	32656.7
737.5	40526.8	732.2	37266.8	726.9	36941.5	721.6	33862.8	716.3	32535.3
737.4	40066	732.1	36884.8	726.8	36774.5	721.5	33304.9	716.2	32851.3
737.3	40289.7	732	36532.8	726.7	36962.4	721.4	33419.3	716.1	32937.6
737.2	40057.4	731.9	36937.8	726.6	36564.4	721.3	33524.7	716	32668.6
737.1	39786.7	731.8	36573.9	726.5	36563.6	721.2	33723.4	715.9	32363.4
737	39536.6	731.7	36897.8	726.4	36585.3	721.1	33461.6	715.8	32866.3
736.9	39483.7	731.6	36829.6	726.3	36370.5	721	33236.8	715.7	32510
736.8	39342.1	731.5	37127.5	726.2	36940.9	720.9	33575.2	715.6	32841
736.7	39309	731.4	37106.3	726.1	36677.9	720.8	33478.3	715.5	32727.8
736.6	39489.1	731.3	36786.5	726	36801.7	720.7	33743.2	715.4	32976.2
736.5	39434.1	731.2	36880.6	725.9	36973.8	720.6	33484.7	715.3	32944.1
736.4	39272.3	731.1	36636	725.8	36805.7	720.5	32994.2	715.2	32773.3
736.3	39146.1	731	36642.3	725.7	36600.4	720.4	33201	715.1	33090.5
736.2	39063.5	730.9	36675.9	725.6	36511.7	720.3	33619.3	715	32898.6
736.1	38959.6	730.8	36906.2	725.5	36681.2	720.2	33526.6	714.9	32752.6
736	39243.8	730.7	36428.2	725.4	36653.6	720.1	33138.2	714.8	33040.6
735.9	39195.5	730.6	36717.2	725.3	36415.1	720	33271	714.7	32895
735.8	39047.8	730.5	36944.7	725.2	36797.6	719.9	33035.6	714.6	33266.5
735.7	38918.9	730.4	36257.2	725.1	36582.4	719.8	32828	714.5	33314.1
735.6	38803.7	730.3	36737.4	725	36261.1	719.7	33048.9	714.4	33265.3
735.5	38253.3	730.2	36692.5	724.9	36258.4	719.6	33393.8	714.3	33445.7
735.4	38651.6	730.1	36417.3	724.8	36383.1	719.5	33075.1	714.2	33898.8
735.3	38410.4	730	36373.1	724.7	36275.2	719.4	33407	714.1	33703.1
735.2	38212.3	729.9	36239	724.6	36527	719.3	33128.7	714	33377.9
735.1	38630.9	729.8	36831.9	724.5	36417	719.2	33273.8	713.9	33530.8
735	38470.1	729.7	36383.1	724.4	36424.5	719.1	32795	713.8	33751.6
734.9	38330.2	729.6	36549	724.3	35890.8	719	33335.4	713.7	33716.4
734.8	38256.5	729.5	36255.3	724.2	36042.4	718.9	33371.7	713.6	33589.3

Table 9(continued) relationship between binding energy (eV) and residuals for Fe 450°C, 8 hr cont.

Binding energy	Residuals	Binding energy	Residuals	Binding energy	Residuals
713.5	33939.5	708.2	29302.3	702.9	29067.5
713.4	33970.7	708.1	29456.8	702.8	28985.5
713.3	34057.7	708	29300.3	702.7	28914.6
713.2	34370.6	707.9	29233	702.6	29341
713.1	34488.2	707.8	29120.3	702.5	29292.3
713	34377.7	707.7	29014.7	702.4	29299
712.9	34342.2	707.6	29272.9	702.3	29069.9
712.8	34492.9	707.5	28958.7	702.2	29241.2
712.7	34630.8	707.4	28963.5	702.1	29209.6
712.6	34693.3	707.3	28978.9	702	29390.7
712.5	34565.3	707.2	29320.7	701.9	29046.4
712.4	34711.1	707.1	29156.7	701.8	29494.7
712.3	34862.8	707	29172.2	701.7	29160
712.2	34659.2	706.9	29087.1	701.6	29413.1
712.1	34621.7	706.8	29302	701.5	29064.6
712	34867.2	706.7	29092.7	701.4	29004.3
711.9	35324.4	706.6	29265.7	701.3	29416.1
711.8	35050.4	706.5	29050.1	701.2	29219.7
711.7	35116.2	706.4	28993.5	701.1	29092.5
711.6	35215.6	706.3	29139.5	701	29144.6
711.5	35039.5	706.2	29460.2	700.9	28621.9
711.4	35178.7	706.1	29538.8	700.8	28913.7
711.3	35257	706	29406.9	700.7	29168.2
711.2	34914	705.9	28667.9	700.6	28853.9
711.1	34621.3	705.8	29091.2	700.5	28584.4
711	34657.9	705.7	29000.6	700.4	28640.2
710.9	34567.4	705.6	29262.6	700.3	28878.4
710.8	34464.9	705.5	29214.8	700.2	29221.3
710.7	34602.2	705.4	29346.4	700.1	28902
710.6	33841.3	705.3	29110.3	700	28737.3
710.5	33732.8	705.2	29229.1		
710.4	33431.4	705.1	29321.7		
710.3	33726.4	705	29368.2		
710.2	33344.6	704.9	29211.9		
710.1	32525	704.8	29383.7		
710	32451.8	704.7	29366.2		
709.9	32437.8	704.6	29434.7		
709.8	32266.1	704.5	29105.3		
709.7	31552.7	704.4	29077		
709.6	31501.4	704.3	29104.7		
709.5	31296.3	704.2	29299.1		
709.4	31023.2	704.1	29248.2		
709.3	30767.4	704	29390.2		
709.2	30499.9	703.9	29028.2		
709.1	30148.5	703.8	29451.8		
709	30242.1	703.7	29208.2		
708.9	30171.3	703.6	29217.7		
708.8	29960.7	703.5	29025.6		
708.7	29374.9	703.4	29257.1		
708.6	29292.9	703.3	29464.6		
708.5	29584.3	703.2	29025.2		
708.4	29306.9	703.1	29405.9		
708.3	29513.6	703	29281.5		

Table 10 relationship between binding energy (eV) and residuals for Cr 600°C, 6 hr

Binding energy	Residuals	Binding energy	Residuals	Binding energy	Residuals	Binding energy	Residuals	Binding energy	Residuals
595	24778.5	589.7	25609.3	584.4	23431.6	579.1	27438.4	573.8	20538.2
594.9	24566.6	589.6	25319.9	584.3	23471.3	579	27641	573.7	20832.8
594.8	24421.6	589.5	25615.5	584.2	23192	578.9	27783.6	573.6	20785.4
594.7	24435.1	589.4	25735.4	584.1	23181.5	578.8	27963.6	573.5	20885.1
594.6	24615.4	589.3	25922.4	584	23216.9	578.7	28296.3	573.4	20623.2
594.5	24726.2	589.2	25867	583.9	23191	578.6	28416.4	573.3	20634.5
594.4	24460.4	589.1	25777.9	583.8	23149.9	578.5	28785.2	573.2	20655.8
594.3	24482	589	26063.6	583.7	22938.4	578.4	28924.9	573.1	20792.8
594.2	24429.5	588.9	26085.4	583.6	23144.8	578.3	28880.4	573	20770.8
594.1	24398.1	588.8	26130.6	583.5	23010.1	578.2	29125.4	572.9	20632.2
594	24483.7	588.7	26404	583.4	22699.3	578.1	29510.1	572.8	20519.6
593.9	24590.3	588.6	26728.1	583.3	22977.7	578	29552.5	572.7	20706.4
593.8	24481.2	588.5	26881.5	583.2	23106.4	577.9	29468.7	572.6	20594.3
593.7	24345.9	588.4	26981.1	583.1	23001.1	577.8	29561	572.5	20593.8
593.6	24243.9	588.3	26858.9	583	23256.4	577.7	29408.4	572.4	20710.6
593.5	24199.5	588.2	26819.6	582.9	23033.3	577.6	29126.6	572.3	20646.6
593.4	24039	588.1	27316.2	582.8	23053.6	577.5	29212.6	572.2	20750.4
593.3	24178.3	588	27536.8	582.7	22971.6	577.4	29145.2	572.1	20941.6
593.2	24367.8	587.9	27444.1	582.6	23134	577.3	28616.8	572	20690.5
593.1	24287.9	587.8	27376.7	582.5	23096.3	577.2	28393.7	571.9	20601.1
593	24189.3	587.7	27493.5	582.4	23190.6	577.1	27921.9	571.8	20723.3
592.9	24527.1	587.6	27536.1	582.3	23063.8	577	27675.6	571.7	20586.7
592.8	24430.3	587.5	27269.2	582.2	22956.4	576.9	27118.4	571.6	20621.1
592.7	24269.9	587.4	27419.8	582.1	23184.7	576.8	27028.9	571.5	20403.5
592.6	24266.3	587.3	27121.3	582	23012.4	576.7	26582.5	571.4	20826.7
592.5	24071.6	587.2	26860.2	581.9	23206.1	576.6	26117.7	571.3	20646.6
592.4	24373	587.1	27147	581.8	23175.1	576.5	25586.2	571.2	20634.3
592.3	24355.3	587	26904.7	581.7	23224.3	576.4	25067.1	571.1	20387.4
592.2	24506.3	586.9	26672	581.6	23388.4	576.3	24504.5	571	20629.8
592.1	24562.8	586.8	26684.3	581.5	23470.2	576.2	24031.4	570.9	20637.9
592	24361.9	586.7	26233.1	581.4	23616.1	576.1	23470.7	570.8	20880.1
591.9	24586.9	586.6	26039.7	581.3	23755	576	23513.2	570.7	20501.5
591.8	24652.9	586.5	25845.6	581.2	23731.3	575.9	23015.2	570.6	20624.3
591.7	24570.3	586.4	25735.9	581.1	23616.4	575.8	22700.7	570.5	20688.9
591.6	24538.2	586.3	25085.9	581	23932	575.7	22420.4	570.4	20840
591.5	24591.1	586.2	25016.7	580.9	24011.7	575.6	22068.6	570.3	20850.3
591.4	24835.1	586.1	25117	580.8	24082.3	575.5	21896.9	570.2	20734.7
591.3	24748.4	586	24876.2	580.7	24084.6	575.4	21606.5	570.1	20686.2
591.2	24817.8	585.9	24846.4	580.6	24240.6	575.3	21556.4	570	20815.9
591.1	24618.6	585.8	24617	580.5	24541.8	575.2	21669.5		
591	24661.4	585.7	24324	580.4	24669.2	575.1	21214.4		
590.9	24741.5	585.6	24098.5	580.3	24884	575	21217.9		
590.8	24773	585.5	23996.7	580.2	24833.6	574.9	21124.8		
590.7	24562.8	585.4	23940.4	580.1	25135.4	574.8	21036.7		
590.6	24911.2	585.3	23664.3	580	25580	574.7	21044.5		
590.5	25245.7	585.2	23639.3	579.9	25558.4	574.6	21037.2		
590.4	24859.7	585.1	23779	579.8	25750	574.5	21313.9		
590.3	25070.7	585	23596.2	579.7	26044.4	574.4	20936.4		
590.2	25108.3	584.9	23576.8	579.6	26256.3	574.3	20836.4		
590.1	25233.5	584.8	23450	579.5	26580.9	574.2	20766.5		
590	25152.7	584.7	23274	579.4	26844.4	574.1	20743		
589.9	25241.8	584.6	23377.9	579.3	26806.2	574	20689.3		
589.8	25244.4	584.5	23497.4	579.2	27167.3	573.9	20767.1		

Table 11 relationship between binding energy (eV) and residuals for Fe 600°C, 6 hr

Binding energy	Residuals	Binding energy	Residuals	Binding energy	Residuals	Binding energy	Residuals	Binding energy	Residuals
740	58068.6	734.7	50549.1	729.4	47741.3	724.1	46502.1	718.8	43230.4
739.9	57897.4	734.6	50618.3	729.3	47827.5	724	46555.4	718.7	43048.1
739.8	57813	734.5	50625.6	729.2	47979.7	723.9	46162.9	718.6	43123.4
739.7	57990.9	734.4	50669.7	729.1	47865.3	723.8	46089.1	718.5	43256.7
739.6	57880.6	734.3	49912.8	729	48567.2	723.7	45881.7	718.4	43294.9
739.5	56721.1	734.2	50249.7	728.9	48333.8	723.6	46340.5	718.3	42782.7
739.4	56560.2	734.1	49810.3	728.8	47859.8	723.5	46065.1	718.2	42906.2
739.3	56005.7	734	50108.8	728.7	48496	723.4	46156.5	718.1	42631.5
739.2	56410.6	733.9	50334.4	728.6	47615.6	723.3	45980.8	718	42974.2
739.1	56178	733.8	49915.8	728.5	48442.9	723.2	45395.8	717.9	42941.4
739	56198.8	733.7	49917.2	728.4	48643	723.1	44841.4	717.8	42955.6
738.9	55926.8	733.6	50117.7	728.3	48485.2	723	45048.9	717.7	42842.9
738.8	55789.6	733.5	50290.7	728.2	48063.7	722.9	45031.4	717.6	42502
738.7	54935.9	733.4	49570.9	728.1	47940.5	722.8	44760.3	717.5	42376
738.6	55422.7	733.3	49648.3	728	48049.1	722.7	44929.7	717.4	42498.1
738.5	55278.8	733.2	49606.8	727.9	48199.7	722.6	44112.1	717.3	42270.6
738.4	54556	733.1	49472.9	727.8	48281	722.5	45193.9	717.2	42654.5
738.3	54738.9	733	49464.5	727.7	47930.3	722.4	44837.4	717.1	42937.2
738.2	54968.2	732.9	49952.7	727.6	47702.5	722.3	44444.6	717	42706.2
738.1	54498.2	732.8	49521.8	727.5	47273.8	722.2	44011.8	716.9	42278.2
738	54297.3	732.7	49341.2	727.4	47790.1	722.1	43991.4	716.8	42326.6
737.9	54261.5	732.6	49287.2	727.3	48177.1	722	44221.9	716.7	42550.6
737.8	54460.3	732.5	49529.4	727.2	47604.5	721.9	44099.1	716.6	42617.7
737.7	54281.8	732.4	49329.4	727.1	47662.5	721.8	43760	716.5	42422.5
737.6	53819.6	732.3	49695.5	727	47798	721.7	43743	716.4	41873.5
737.5	53565.6	732.2	49020	726.9	47700.6	721.6	43905.1	716.3	42593
737.4	53606.6	732.1	49023.4	726.8	47959.1	721.5	43938.7	716.2	42365.4
737.3	53270.8	732	49043.4	726.7	47913.2	721.4	43762	716.1	42463.1
737.2	53052.3	731.9	49110.2	726.6	48202.8	721.3	43443.1	716	41783.1
737.1	52884.9	731.8	48702.4	726.5	48310.1	721.2	43706.1	715.9	42275.1
737	52434.2	731.7	48795.5	726.4	48144.7	721.1	44008.4	715.8	42403.5
736.9	52596.4	731.6	48719.1	726.3	48065.6	721	43885.9	715.7	42385.3
736.8	52718.2	731.5	48871.2	726.2	48194.8	720.9	43487.1	715.6	41933.8
736.7	52742.8	731.4	48790	726.1	47908.1	720.8	43425.9	715.5	42202.6
736.6	52819.1	731.3	48699.2	726	47562.5	720.7	43482.6	715.4	42617.4
736.5	52344.8	731.2	48835.3	725.9	47448.5	720.6	43212.4	715.3	42820
736.4	51954.2	731.1	48504.6	725.8	47118.3	720.5	43533.7	715.2	42470.5
736.3	51997.4	731	48257.2	725.7	47569.2	720.4	43459.4	715.1	42833.8
736.2	51602.2	730.9	48401.9	725.6	48086.4	720.3	43550.9	715	42497.7
736.1	51794.4	730.8	48631.2	725.5	47597.1	720.2	43905.5	714.9	42396.4
736	51641.7	730.7	49013.4	725.4	47730.6	720.1	43998.7	714.8	42838.2
735.9	51761.8	730.6	48543	725.3	47472.2	720	43652.7	714.7	42860.9
735.8	51759.8	730.5	48644.3	725.2	47631.8	719.9	43154.4	714.6	42965
735.7	51473.4	730.4	48794.1	725.1	47670.8	719.8	43266.6	714.5	42937.8
735.6	51172.6	730.3	48187.2	725	47466.6	719.7	43642	714.4	42973.2
735.5	51251.5	730.2	48409.3	724.9	47206.9	719.6	43334.8	714.3	43148.4
735.4	50988.2	730.1	48835.7	724.8	47347.4	719.5	44023.5	714.2	43118
735.3	50703.8	730	48699.4	724.7	47089.2	719.4	43661	714.1	43275.7
735.2	50661.1	729.9	48737.7	724.6	47046.6	719.3	43254.8	714	43164.5
735.1	50544.2	729.8	48464.8	724.5	46482.7	719.2	43421.2	713.9	43049.4
735	50563.9	729.7	48621.3	724.4	46979.4	719.1	43300.9	713.8	43523.5
734.9	50903.4	729.6	48354.4	724.3	47105.6	719	43007.2	713.7	43702.6
734.8	50534.9	729.5	48235.4	724.2	46300.9	718.9	42920.6	713.6	43907.8

Table 11 (continued) relationship between binding energy (eV) and residuals for Fe 600°, 6 hr.

Binding energy	Residuals	Binding energy	Residuals	Binding energy	Residuals
713.5	43646.7	708.2	38901.6	702.9	38464.6
713.4	43272.2	708.1	38947.3	702.8	38360.8
713.3	43590.2	708	39058.4	702.7	38522.5
713.2	44210.1	707.9	38468	702.6	38406.7
713.1	43935.9	707.8	38575.5	702.5	38659.3
713	43807.5	707.7	38525.2	702.4	38907.6
712.9	44190	707.6	38772.5	702.3	38639.9
712.8	43732.5	707.5	38571.3	702.2	39012.5
712.7	44111.6	707.4	38597	702.1	38882.8
712.6	44030.4	707.3	38978.3	702	38836.1
712.5	44029.1	707.2	38577.6	701.9	38979
712.4	44422.3	707.1	38326.1	701.8	39010.7
712.3	44216.1	707	38605.2	701.7	39422.9
712.2	44300.6	706.9	38792.4	701.6	38922.8
712.1	44156.9	706.8	38763.6	701.5	38982.9
712	44778.9	706.7	38544.5	701.4	38856.5
711.9	44711.5	706.6	38504.8	701.3	38358.1
711.8	44671.4	706.5	38781.8	701.2	38422.3
711.7	44595.5	706.4	38721.9	701.1	38821.6
711.6	44691.4	706.3	39054	701	38422.6
711.5	44360.6	706.2	39040.7	700.9	38306.7
711.4	44784.5	706.1	38600.5	700.8	38513.6
711.3	44684.3	706	38848.3	700.7	38748.9
711.2	44610.7	705.9	38772.5	700.6	38522.7
711.1	44503	705.8	38599.4	700.5	38610.2
711	44242.6	705.7	38421.3	700.4	38600.3
710.9	43794	705.6	38653.6	700.3	38356.1
710.8	43841	705.5	38990	700.2	38581.7
710.7	43888.2	705.4	38978.1	700.1	38160.8
710.6	43639.8	705.3	38760.6	700	37939.1
710.5	43433.4	705.2	38538.2		
710.4	43530.5	705.1	38457.2		
710.3	43393.1	705	38531.8		
710.2	42937.8	704.9	38849		
710.1	42595.5	704.8	38626.8		
710	42274.5	704.7	38822.5		
709.9	42175.3	704.6	38564.2		
709.8	41981.3	704.5	38746.9		
709.7	41493.8	704.4	38653.1		
709.6	41115.1	704.3	38651		
709.5	41306.4	704.2	38982.4		
709.4	41109	704.1	38695		
709.3	40355.5	704	38555.8		
709.2	40471.3	703.9	39018.1		
709.1	40370.6	703.8	38851.2		
709	40103.5	703.7	38771.2		
708.9	39794	703.6	39096.2		
708.8	39634.1	703.5	38766		
708.7	39036.9	703.4	38680.4		
708.6	39320	703.3	38686.6		
708.5	39386.7	703.2	38946.7		
708.4	39113.9	703.1	38783		
708.3	39323.7	703	38935		

Table 12 relationship between binding energy (eV) and residuals for Cr 800°C, 4 hr

Binding energy	Residuals	Binding energy	Residuals	Binding energy	Residuals	Binding energy	Residuals	Binding energy	Residuals
595	20832.9	589.7	20623.9	584.4	20505.1	579.1	20611.8	573.8	16763.5
594.9	20696.5	589.6	20770.1	584.3	20164.7	579	20941.9	573.7	16645.5
594.8	20785.8	589.5	20958	584.2	19886.7	578.9	21217	573.6	16497.2
594.7	20543.2	589.4	20802.6	584.1	19846.9	578.8	21603.5	573.5	16318.9
594.6	20631.4	589.3	21121.2	584	19755.3	578.7	21647.7	573.4	16440.9
594.5	20651.1	589.2	21291	583.9	19856.3	578.6	21603.8	573.3	16300.8
594.4	20759.8	589.1	20914.4	583.8	19461.7	578.5	21915.5	573.2	16238.6
594.3	20591	589	21089.7	583.7	19276	578.4	22456.7	573.1	16049.7
594.2	20620.5	588.9	21608.3	583.6	19453.1	578.3	22351.7	573	16075.9
594.1	20476.9	588.8	21767.3	583.5	19412.9	578.2	22780.2	572.9	16099.3
594	20621.7	588.7	21703	583.4	19363.1	578.1	22892.4	572.8	16251.9
593.9	20531.7	588.6	21705.5	583.3	19204.1	578	23208.2	572.7	16135.7
593.8	20525.3	588.5	21646.8	583.2	19027.1	577.9	23682.5	572.6	16267.7
593.7	20407.3	588.4	21851.7	583.1	19174.9	577.8	23898	572.5	16120.5
593.6	20452.8	588.3	22034.3	583	18970.3	577.7	24487.8	572.4	16081.3
593.5	20436.8	588.2	22258.8	582.9	19042.9	577.6	24696.9	572.3	16164.2
593.4	20462.7	588.1	22148.8	582.8	19081.3	577.5	24956.5	572.2	15960.1
593.3	20410.6	588	22252.4	582.7	18873.7	577.4	25237.9	572.1	15964.4
593.2	20091.4	587.9	22319.7	582.6	18836.4	577.3	25642.7	572	15942.3
593.1	20248.1	587.8	22808.5	582.5	18779.4	577.2	25846.9	571.9	15842.6
593	20230.7	587.7	22858.7	582.4	18756	577.1	26005.4	571.8	15902.3
592.9	20214.6	587.6	22993.4	582.3	18882.6	577	26257.9	571.7	16022.2
592.8	20119	587.5	23102.4	582.2	19051.7	576.9	26149.4	571.6	16066.9
592.7	20141.7	587.4	23143.4	582.1	18771	576.8	26615.3	571.5	15793.1
592.6	20260.9	587.3	23076.8	582	18894.2	576.7	26708.5	571.4	15871.7
592.5	20260.9	587.2	23308.3	581.9	18923.8	576.6	26511	571.3	16100.4
592.4	20282.7	587.1	23317	581.8	18954.9	576.5	26339.5	571.2	15907.2
592.3	20098.7	587	23421.2	581.7	18977.7	576.4	26636	571.1	15868.6
592.2	20375.2	586.9	23738.2	581.6	18987.1	576.3	26738	571	15858.6
592.1	20415.2	586.8	23718.3	581.5	19060.4	576.2	26336.5	570.9	16049.3
592	20380.1	586.7	23777.1	581.4	18963.8	576.1	26025.6	570.8	16002.9
591.9	20247.6	586.6	23651.2	581.3	19239.4	576	26015.1	570.7	15947.6
591.8	20238	586.5	23739	581.2	18898.3	575.9	25457.1	570.6	16012.2
591.7	20119.3	586.4	23804.4	581.1	18947.8	575.8	25163.5	570.5	16072.9
591.6	20240	586.3	23904.4	581	19081.2	575.7	24545.7	570.4	15873.2
591.5	20105.6	586.2	23677.9	580.9	19068.8	575.6	24358.3	570.3	15920.4
591.4	20324.2	586.1	23626.5	580.8	19069.3	575.5	23883.5	570.2	16111.2
591.3	20249.7	586	23584.3	580.7	18947	575.4	23287	570.1	15972.3
591.2	20205.3	585.9	23486	580.6	19112.2	575.3	22830.9	570	16025.6
591.1	20342.1	585.8	23385.2	580.5	19202.2	575.2	22153.2		
591	20317.2	585.7	23350.8	580.4	19203.9	575.1	21511.8		
590.9	20352.5	585.6	23060.6	580.3	19374.8	575	21029.4		
590.8	20343.7	585.5	22983.2	580.2	19272.6	574.9	20624.1		
590.7	20138.2	585.4	22700.6	580.1	19503.7	574.8	19994.1		
590.6	20271.6	585.3	22528.9	580	19508.3	574.7	19306		
590.5	20397.9	585.2	22431.6	579.9	19735.1	574.6	19155.8		
590.4	20375.2	585.1	22186.5	579.8	19702	574.5	18549		
590.3	20447.1	585	21833.6	579.7	19824.2	574.4	18421.6		
590.2	20526.3	584.9	21555.9	579.6	19896.5	574.3	18013.6		
590.1	20640.6	584.8	21352.5	579.5	20143.6	574.2	17685		
590	20580	584.7	21068.7	579.4	20314.6	574.1	17451.8		
589.9	20586.4	584.6	20985.1	579.3	20516.6	574	17093.5		
589.8	20708	584.5	20651.5	579.2	20612.4	573.9	16851.7		

Table 13 relationship between binding energy (eV) and residuals for Fe 800°C, 4 hr

Binding energy	Residuals	Binding energy	Residuals	Binding energy	Residuals	Binding energy	Residuals	Binding energy	Residuals
740	47967.2	734.7	41319.9	729.4	40386.6	724.1	40434.4	718.8	35898.5
739.9	47777.3	734.6	41235.6	729.3	40474.9	724	39792.4	718.7	35461.6
739.8	47843.1	734.5	41553.9	729.2	39780.3	723.9	39963.5	718.6	35314.2
739.7	46993.2	734.4	41298	729.1	40222.3	723.8	39871.1	718.5	35462.2
739.6	46603.4	734.3	41084.8	729	40382.2	723.7	39886.9	718.4	35426.4
739.5	46743.7	734.2	40762.2	728.9	40283.2	723.6	39648.5	718.3	35135.6
739.4	46566.4	734.1	41084.7	728.8	40036.8	723.5	39370.3	718.2	35599.7
739.3	46029.1	734	40588.9	728.7	40657.6	723.4	39303.6	718.1	35210.2
739.2	46324.4	733.9	40765.8	728.6	40735.2	723.3	39053.3	718	34791.1
739.1	46454.6	733.8	41261.3	728.5	40529.1	723.2	39418.4	717.9	35360.6
739	45510.9	733.7	41444.3	728.4	40022.1	723.1	39467	717.8	34910.7
738.9	44681.6	733.6	41074.9	728.3	40361.5	723	39040.3	717.7	34622.9
738.8	44970.9	733.5	40890.2	728.2	40571.6	722.9	38529.9	717.6	34895.6
738.7	45058.7	733.4	40872.7	728.1	40265.1	722.8	38490.9	717.5	34982.1
738.6	44869.2	733.3	40991.1	728	40243.8	722.7	38037.3	717.4	35526.5
738.5	44371.6	733.2	40496.7	727.9	40531.6	722.6	38141.7	717.3	35007.7
738.4	44568.4	733.1	40649.7	727.8	40144	722.5	38155.8	717.2	34763.9
738.3	44444.2	733	40365.4	727.7	40409.4	722.4	37759.1	717.1	34889.6
738.2	44300.3	732.9	40647.7	727.6	40667.5	722.3	37728.2	717	34849.5
738.1	43760.4	732.8	40801	727.5	40600.4	722.2	37765.1	716.9	34676
738	43718.5	732.7	40576.5	727.4	40753.9	722.1	37604.8	716.8	34626.2
737.9	43642.5	732.6	40779.8	727.3	40536.9	722	37154.1	716.7	34549
737.8	43930.8	732.5	40292.4	727.2	40715.2	721.9	37442.5	716.6	34905.8
737.7	43738.6	732.4	40420.2	727.1	41055.6	721.8	37043.2	716.5	34935.3
737.6	43302.6	732.3	40386.9	727	40823.6	721.7	36496.5	716.4	34825.3
737.5	43356.3	732.2	40044.1	726.9	40919.1	721.6	36815.5	716.3	34878.2
737.4	43016.1	732.1	39981.3	726.8	40916.2	721.5	36995.3	716.2	34920
737.3	42903.4	732	40304.4	726.7	40729.4	721.4	36371.6	716.1	34762.9
737.2	42873.6	731.9	39901.1	726.6	40603	721.3	36422.8	716	34850.5
737.1	42573	731.8	40330.4	726.5	40932.2	721.2	36775.2	715.9	34533.4
737	42455.3	731.7	40134.8	726.4	40753.3	721.1	36379.2	715.8	34709.1
736.9	42551.1	731.6	40261.9	726.3	40793.7	721	36210.8	715.7	34987
736.8	42322.9	731.5	39918	726.2	40689.2	720.9	36557.4	715.6	34971.4
736.7	42566.8	731.4	39880.1	726.1	40584.7	720.8	36429.6	715.5	35082.8
736.6	42593	731.3	40263.6	726	41088.7	720.7	36171.4	715.4	34737.4
736.5	42295.7	731.2	39868.5	725.9	41305.5	720.6	36460.7	715.3	35044.3
736.4	42084.7	731.1	40147.8	725.8	41709.8	720.5	36261.7	715.2	34925.9
736.3	42126.2	731	39577.3	725.7	41373.2	720.4	35808.7	715.1	35324.6
736.2	42338.3	730.9	40331.3	725.6	40961.7	720.3	36167	715	35323.8
736.1	42272.4	730.8	40048.6	725.5	40924.8	720.2	36283.7	714.9	35175.7
736	41989.3	730.7	40218.6	725.4	40583.9	720.1	35973.4	714.8	35306.7
735.9	41990.3	730.6	39921.2	725.3	41019.5	720	36134.4	714.7	35325.7
735.8	41760.1	730.5	40100.9	725.2	40834.5	719.9	35491.5	714.6	35061.5
735.7	41628.5	730.4	40271.7	725.1	40777.8	719.8	35579.4	714.5	35211.2
735.6	42490.1	730.3	39747.9	725	41093.8	719.7	35614.3	714.4	35441.5
735.5	42204.9	730.2	39834.7	724.9	40901.5	719.6	35565.3	714.3	35470.6
735.4	41892.3	730.1	39579	724.8	41131.2	719.5	35467.7	714.2	35559
735.3	41625.4	730	40020.6	724.7	41066.7	719.4	35772.4	714.1	35524.4
735.2	40871.3	729.9	40500.6	724.6	40644.5	719.3	35708.8	714	35331.1
735.1	41707.2	729.8	40048.2	724.5	40722.4	719.2	35718.3	713.9	35888.7
735	42056.9	729.7	40143.4	724.4	40521.4	719.1	35435.1	713.8	35839
734.9	41423.3	729.6	40043.4	724.3	40574.1	719	35286.3	713.7	35927.6
734.8	41404.9	729.5	40363.9	724.2	40752.6	718.9	35452.7	713.6	36450.1

Table 13(continued) relationship between binding energy (eV) and residuals for Fe 800°C, 4 hr.

Binding energy	Residuals	Binding energy	Residuals	Binding energy	Residuals
713.5	36394.2	708.2	31725.3	702.9	31401.3
713.4	36247.9	708.1	31386.3	702.8	31633.2
713.3	36218.7	708	31452.1	702.7	31480.5
713.2	36457.9	707.9	31844.4	702.6	31288.9
713.1	36362.8	707.8	31320.8	702.5	31192
713	36419	707.7	31225.8	702.4	30923.4
712.9	36652.2	707.6	31236.6	702.3	31010.3
712.8	36720.8	707.5	31027.7	702.2	30904.4
712.7	36663.6	707.4	31047.2	702.1	31228.2
712.6	36788.7	707.3	30984.5	702	31023.9
712.5	36710.1	707.2	30839	701.9	30891.2
712.4	36705.3	707.1	31095.2	701.8	30948.5
712.3	37012.3	707	31024.5	701.7	31379.7
712.2	37216.6	706.9	31024.8	701.6	31568.2
712.1	36979.8	706.8	30701.2	701.5	31553
712	37030.2	706.7	31067.1	701.4	31167.6
711.9	36996.9	706.6	31085.7	701.3	31417.8
711.8	37107.9	706.5	30785.1	701.2	31161.4
711.7	37344.3	706.4	30601.7	701.1	31253.6
711.6	37668.5	706.3	31017.8	701	31294.2
711.5	37177.7	706.2	30863.4	700.9	31238.5
711.4	37154.3	706.1	30976.1	700.8	31188.8
711.3	37168.9	706	30859.2	700.7	31092.3
711.2	37681.2	705.9	30936.2	700.6	30968.8
711.1	37483.4	705.8	31212.7	700.5	31311.2
711	37444.6	705.7	31273.6	700.4	31150
710.9	37331.8	705.6	31169	700.3	31385.8
710.8	37372.1	705.5	31048.4	700.2	31005.7
710.7	36848.2	705.4	30825.8	700.1	31112.7
710.6	37170.3	705.3	30841.9	700	31323.2
710.5	37054.3	705.2	30611.9		
710.4	36428.8	705.1	30378.9		
710.3	36609.8	705	30979.4		
710.2	36285.6	704.9	30796.2		
710.1	35892.2	704.8	31042.1		
710	35923	704.7	31250.4		
709.9	35922.2	704.6	30940.3		
709.8	35757.4	704.5	30797.1		
709.7	35421.7	704.4	31196.6		
709.6	35109	704.3	31339.7		
709.5	34721.6	704.2	31293.4		
709.4	33995.5	704.1	30921.1		
709.3	34177.8	704	31100.2		
709.2	34013.2	703.9	31170.9		
709.1	33628.7	703.8	31566.7		
709	33185.2	703.7	30893.1		
708.9	33088.4	703.6	30813.4		
708.8	32909.8	703.5	31306.5		
708.7	32459	703.4	31361.9		
708.6	32028.7	703.3	31196.1		
708.5	32027.4	703.2	31081.4		
708.4	31640.7	703.1	31203.7		
708.3	31768.9	703	31353.8		

Table 14 relationship between binding energy (eV) and residuals for Cr 800°C, 6 hr

Binding energy	Residuals	Binding energy	Residuals	Binding energy	Residuals	Binding energy	Residuals	Binding energy	Residuals
595	20996.4	589.7	20492	584.4	19621.4	579.1	19995	573.8	17775.6
594.9	21006.3	589.6	20456.4	584.3	19499.5	579	20068.5	573.7	17637.5
594.8	20837.6	589.5	20509	584.2	19280.5	578.9	20323.9	573.6	17631.2
594.7	20771.3	589.4	20693	584.1	19538.4	578.8	20529	573.5	17589.4
594.6	20769.1	589.3	20633.7	584	19493.7	578.7	20516.5	573.4	17576.7
594.5	20726.7	589.2	20640.9	583.9	19456.8	578.6	20782.3	573.3	17663.5
594.4	20604.6	589.1	20667	583.8	19547.2	578.5	20970.9	573.2	17527.6
594.3	20709.2	589	20537.7	583.7	19051.6	578.4	20953.8	573.1	17630.9
594.2	20726.5	588.9	20549.5	583.6	19071.2	578.3	21129.8	573	17526.9
594.1	20600.3	588.8	20493.8	583.5	19021.5	578.2	21313.4	572.9	17579
594	20804.4	588.7	20683.8	583.4	19224.8	578.1	21386.8	572.8	17463.6
593.9	20776.9	588.6	20768.5	583.3	19214.1	578	21431	572.7	17363.8
593.8	20581.2	588.5	20734.5	583.2	19023	577.9	21881.8	572.6	17320.9
593.7	20747.6	588.4	20814.2	583.1	19169.8	577.8	21920.5	572.5	17490.4
593.6	20723.7	588.3	20915.3	583	19093.5	577.7	21978.1	572.4	17483.5
593.5	20589.2	588.2	20953.2	582.9	19056.3	577.6	22226.7	572.3	17571.6
593.4	20686.1	588.1	21048.3	582.8	18992.1	577.5	22573.3	572.2	17506.7
593.3	20382.5	588	20995.1	582.7	19005.4	577.4	22492.1	572.1	17401.3
593.2	20447.3	587.9	21438.4	582.6	19129.3	577.3	22683.1	572	17363.5
593.1	20345	587.8	21225.3	582.5	18975	577.2	23081.8	571.9	17312.1
593	20648.5	587.7	21460.1	582.4	19027.3	577.1	23014.2	571.8	17532.8
592.9	20660.8	587.6	21404.9	582.3	19129.8	577	23025.8	571.7	17575
592.8	20367.1	587.5	21362.2	582.2	18989.9	576.9	23399.6	571.6	17425.3
592.7	20427.3	587.4	21447.3	582.1	18992.1	576.8	23426.6	571.5	17511.2
592.6	20419.4	587.3	21621.3	582	19130.9	576.7	23142.9	571.4	17420.1
592.5	20197.3	587.2	21635.1	581.9	19020.6	576.6	23379.1	571.3	17541.3
592.4	20287.4	587.1	21633.8	581.8	18967.5	576.5	23378	571.2	17392
592.3	20461.2	587	21654	581.7	19084.7	576.4	22958.9	571.1	17409.9
592.2	20591.2	586.9	21447.4	581.6	19175	576.3	22964.2	571	17233.9
592.1	20544.9	586.8	21614.5	581.5	19067.6	576.2	22801.3	570.9	17556
592	20284.6	586.7	21654.9	581.4	19255.3	576.1	22512.9	570.8	17540.9
591.9	20137.4	586.6	21783.8	581.3	19166.2	576	22455.2	570.7	17605.1
591.8	20231.9	586.5	21547.6	581.2	19148.9	575.9	22409	570.6	17414.2
591.7	20428.3	586.4	21775.9	581.1	18994.1	575.8	22216.8	570.5	17540
591.6	20250	586.3	21664.5	581	19042.1	575.7	21929.4	570.4	17275.6
591.5	20486.1	586.2	21555.1	580.9	19038	575.6	21504.1	570.3	17300.8
591.4	20574.5	586.1	21589.3	580.8	19165.2	575.5	21458.9	570.2	17379.6
591.3	20492.2	586	21567.3	580.7	19387.2	575.4	20770.2	570.1	17160.3
591.2	20348.2	585.9	21687.3	580.6	19377.8	575.3	20545.2	570	17254.5
591.1	20183	585.8	21422.2	580.5	19239.9	575.2	20387.7		
591	20207.7	585.7	21226.4	580.4	19339.5	575.1	20104.3		
590.9	20427.7	585.6	21094	580.3	19449.7	575	19721.8		
590.8	20071	585.5	20938.9	580.2	19420.2	574.9	19371		
590.7	20206.5	585.4	20864.6	580.1	19263.8	574.8	19157.4		
590.6	20208.7	585.3	20749.1	580	19330.9	574.7	19000.9		
590.5	20318.9	585.2	20758.9	579.9	19224.5	574.6	18577.8		
590.4	20339	585.1	20611.2	579.8	19524.5	574.5	18492.9		
590.3	20470.2	585	20390.8	579.7	19446	574.4	18363.6		
590.2	20540.3	584.9	20203.4	579.6	19603.2	574.3	18221.8		
590.1	20381.9	584.8	20247.4	579.5	19538.6	574.2	18221.5		
590	20502.3	584.7	20026.5	579.4	19689.8	574.1	18215.5		
589.9	20332.4	584.6	19783.3	579.3	19935.9	574	17913		
589.8	20458.9	584.5	19734.2	579.2	20122.7	573.9	17861		

Table 15 relationship between binding energy (eV) and residuals for Fe 800°C, 6 hr

Binding energy	Residuals	Binding energy	Residuals	Binding energy	Residuals	Binding energy	Residuals	Binding energy	Residuals
740	55921.7	734.7	48746	729.4	46001.1	724.1	47206.4	718.8	42327.6
739.9	55068.4	734.6	48772.5	729.3	46033.1	724	47054	718.7	42133.7
739.8	54847.8	734.5	48301.1	729.2	45583.4	723.9	46827.8	718.6	41962.1
739.7	54669.6	734.4	48467.2	729.1	46119.3	723.8	46807.8	718.5	42412.4
739.6	54606.5	734.3	48255.5	729	45788.6	723.7	46084.6	718.4	42436.2
739.5	53890.1	734.2	48032.7	728.9	46052.1	723.6	45701.1	718.3	41923.5
739.4	54038.9	734.1	48062.8	728.8	46548	723.5	46099.7	718.2	42117
739.3	53342.9	734	48182.4	728.7	46447.6	723.4	45942.2	718.1	42161.7
739.2	53305.6	733.9	47837	728.6	46284.6	723.3	45504.8	718	41865.1
739.1	53048.9	733.8	48153.6	728.5	46252.2	723.2	45162.7	717.9	41938.2
739	52557.3	733.7	48099.2	728.4	46334.4	723.1	45614.1	717.8	41650.5
738.9	52706.1	733.6	47752.6	728.3	46043.1	723	45169.5	717.7	41668.6
738.8	52656	733.5	47740.6	728.2	46257.5	722.9	45070.8	717.6	41545.5
738.7	52335.3	733.4	47838.8	728.1	46394.5	722.8	45037.7	717.5	41803.2
738.6	51961.2	733.3	47727.8	728	46715.3	722.7	44683.4	717.4	41555.1
738.5	51862.2	733.2	47577.5	727.9	46229.3	722.6	44381.2	717.3	42155.3
738.4	51301.4	733.1	47419.2	727.8	46031.5	722.5	44324.6	717.2	41623.3
738.3	50824.7	733	47807	727.7	45888	722.4	43854.5	717.1	41772.3
738.2	51577.3	732.9	47142.7	727.6	46479.2	722.3	43679.7	717	41896.1
738.1	51224.7	732.8	47261.1	727.5	46842	722.2	43940.3	716.9	41821.3
738	51099.9	732.7	47078.1	727.4	46512.5	722.1	43535.6	716.8	41457.9
737.9	51211.3	732.6	47240	727.3	46771.3	722	43271.4	716.7	41284.7
737.8	51233.2	732.5	47013.6	727.2	46828.1	721.9	43414.5	716.6	41480
737.7	50797.4	732.4	46887.2	727.1	46667.8	721.8	42974	716.5	41225.6
737.6	50351.4	732.3	46524.6	727	47086.7	721.7	43040.6	716.4	41397.6
737.5	50129.4	732.2	46582.9	726.9	46741.5	721.6	43168.4	716.3	41538.1
737.4	50568.6	732.1	46801.5	726.8	46500.6	721.5	43283.9	716.2	41495.6
737.3	50367.1	732	46924.3	726.7	47058.3	721.4	42755.2	716.1	41983.2
737.2	50114	731.9	46980.8	726.6	47533.5	721.3	42513.9	716	41836.9
737.1	50041.2	731.8	46612.8	726.5	47652.8	721.2	42542.6	715.9	41459.8
737	50050.8	731.7	46678.4	726.4	47418.5	721.1	42879.3	715.8	41463.8
736.9	49754.7	731.6	46011.7	726.3	47347.3	721	42874.4	715.7	41675.9
736.8	49558.2	731.5	46521.9	726.2	47193.3	720.9	42906	715.6	41759.4
736.7	50084.9	731.4	46456.7	726.1	47436.7	720.8	42680	715.5	41990.6
736.6	49859.6	731.3	46459.9	726	47891.1	720.7	42834.2	715.4	42075.5
736.5	49432.2	731.2	46751.9	725.9	47768.3	720.6	42297.6	715.3	41774.6
736.4	49115.9	731.1	46685.4	725.8	47975.4	720.5	42674.1	715.2	42292.4
736.3	49490	731	46661.4	725.7	47541.8	720.4	42319.2	715.1	42637.5
736.2	49459.6	730.9	46620.5	725.6	47769.4	720.3	42557.7	715	41974.3
736.1	49146.9	730.8	46253.7	725.5	47681.2	720.2	42706.5	714.9	41780.2
736	48793.9	730.7	46333.5	725.4	47885.6	720.1	42944.4	714.8	42422
735.9	49451.3	730.6	46658.7	725.3	47579.2	720	42942	714.7	42570.2
735.8	48961.2	730.5	46139.3	725.2	47377.4	719.9	42763.2	714.6	42567.7
735.7	49183.9	730.4	46103.4	725.1	47732.3	719.8	42733.8	714.5	42806.7
735.6	48609.4	730.3	45686	725	47554.6	719.7	42769.7	714.4	42705.2
735.5	48787.5	730.2	45931.8	724.9	47801.2	719.6	42381.5	714.3	42889.5
735.4	48467.2	730.1	45997.6	724.8	47715	719.5	42255.6	714.2	42719.2
735.3	48807.4	730	46247.3	724.7	47348	719.4	42204.2	714.1	42894.1
735.2	48319.7	729.9	46323.9	724.6	47583.5	719.3	42231	714	43156.4
735.1	48211.4	729.8	46377.8	724.5	47742.3	719.2	42556.5	713.9	43321.4
735	48151.8	729.7	45763	724.4	47349.2	719.1	42570.1	713.8	43565.1
734.9	48536.4	729.6	45602.4	724.3	47378.4	719	41986.8	713.7	43659
734.8	48561.7	729.5	45841.3	724.2	46746.8	718.9	42064.3	713.6	43641.2

Table 15(continued) relationship between binding energy (eV) and residuals for Fe 800°C, 6 hr.

Binding energy	Residuals	Binding energy	Residuals	Binding energy	Residuals
713.5	43960.2	708.2	36411.4	702.9	35824.6
713.4	43826.5	708.1	36140.3	702.8	35699.2
713.3	44120.1	708	35993.2	702.7	35784.2
713.2	44520.6	707.9	35794.4	702.6	36023
713.1	44211	707.8	35874.1	702.5	35520.4
713	44741.6	707.7	36033.7	702.4	35310.4
712.9	45183.4	707.6	35956.4	702.3	35608.6
712.8	44699.4	707.5	35901.9	702.2	35729.1
712.7	45001	707.4	35786.2	702.1	35886.8
712.6	44803.5	707.3	35377.1	702	36041.7
712.5	45708	707.2	35673.2	701.9	35842.5
712.4	45516.9	707.1	35783.9	701.8	35983.6
712.3	45718.5	707	35855.9	701.7	35953.7
712.2	45563.6	706.9	35574.6	701.6	35620
712.1	45743.9	706.8	35467.1	701.5	35578
712	45923.7	706.7	35906.5	701.4	35756.2
711.9	45912.1	706.6	35809.1	701.3	35463
711.8	45797.2	706.5	35517.8	701.2	35559.8
711.7	46054.2	706.4	35469.9	701.1	35627.5
711.6	45983.6	706.3	35720.9	701	35719
711.5	46167.3	706.2	35925.8	700.9	35717
711.4	46094.8	706.1	35745.5	700.8	35240.2
711.3	45905	706	35307.8	700.7	35382.3
711.2	45736.4	705.9	35806.1	700.6	35038.5
711.1	45948.9	705.8	35499.5	700.5	35130.8
711	46020.7	705.7	35424.4	700.4	35021.4
710.9	46092.2	705.6	35639	700.3	35564.8
710.8	45857.7	705.5	35819.6	700.2	35214.6
710.7	45648.8	705.4	35717.1	700.1	35005.3
710.6	45546.8	705.3	35692.2	700	35225.3
710.5	45304.1	705.2	35995		
710.4	44625.1	705.1	35803.7		
710.3	44524.9	705	35689.4		
710.2	44426.9	704.9	35455.2		
710.1	44042.7	704.8	35795.7		
710	43535.1	704.7	35783.7		
709.9	43516.8	704.6	35746.6		
709.8	42979.3	704.5	35543.8		
709.7	42174.6	704.4	35765		
709.6	41804.9	704.3	36121		
709.5	41087.4	704.2	35622.4		
709.4	41056.2	704.1	35521.1		
709.3	40405.8	704	35324.3		
709.2	39266.9	703.9	35823.7		
709.1	38972.8	703.8	35620.2		
709	39149.8	703.7	35902.6		
708.9	38537.5	703.6	35624		
708.8	38076.2	703.5	35777.9		
708.7	37441.9	703.4	35699.7		
708.6	37659.3	703.3	35584		
708.5	37751.5	703.2	35813.5		
708.4	36632.9	703.1	35865.3		
708.3	36528.6	703	35963.6		

Table 16 relationship between binding energy (eV) and residuals for Cr 800°C, 8 hr

Binding energy	Residuals	Binding energy	Residuals	Binding energy	Residuals	Binding energy	Residuals	Binding energy	Residuals
595	18892.4	589.7	19015	584.4	18395.8	579.1	19284.6	573.8	15787.5
594.9	19194.2	589.6	19103.9	584.3	18307.4	579	19310.4	573.7	15525.3
594.8	19025	589.5	19147.2	584.2	18249	578.9	19200.5	573.6	15494.2
594.7	18947.6	589.4	19118.1	584.1	18070.5	578.8	19296.2	573.5	15506.8
594.6	19000.8	589.3	19082.9	584	17997.1	578.7	19488.9	573.4	15463.1
594.5	18925.7	589.2	19184.7	583.9	17818.7	578.6	19632.4	573.3	15489.5
594.4	18878	589.1	19337.9	583.8	17859.5	578.5	19925	573.2	15602.5
594.3	19002.1	589	19329.8	583.7	17759.9	578.4	20227.4	573.1	15435
594.2	18819.9	588.9	19387.4	583.6	17657.2	578.3	20346.3	573	15539.4
594.1	18855.1	588.8	19360.6	583.5	17437.1	578.2	20589.3	572.9	15663.8
594	18837	588.7	19432.2	583.4	17319	578.1	20700.2	572.8	15493.4
593.9	18788.2	588.6	19602.6	583.3	17579.7	578	20738.3	572.7	15255
593.8	18708.8	588.5	19469.5	583.2	17536	577.9	20860.1	572.6	15514.7
593.7	18638.1	588.4	19705	583.1	17520.7	577.8	21229.2	572.5	15338.7
593.6	18692.6	588.3	19811.6	583	17495.3	577.7	21139.9	572.4	15261.9
593.5	18431	588.2	19784.7	582.9	17492.1	577.6	21411.1	572.3	15517
593.4	18445.1	588.1	19995.9	582.8	17555.8	577.5	21647.6	572.2	15280
593.3	18416.4	588	20153.4	582.7	17315.5	577.4	21777.8	572.1	15400.2
593.2	18517.2	587.9	20263	582.6	17414.2	577.3	21983.3	572	15404.7
593.1	18639.6	587.8	20270.5	582.5	17333.1	577.2	22164.8	571.9	15533.2
593	18594.8	587.7	20372.2	582.4	17328.3	577.1	22382.5	571.8	15422.8
592.9	18535.7	587.6	20324.8	582.3	17391.8	577	22135.4	571.7	15461.2
592.8	18708.4	587.5	20420	582.2	17458.7	576.9	22141.9	571.6	15391
592.7	18461.9	587.4	20650.4	582.1	17418.2	576.8	22314.2	571.5	15329
592.6	18655.3	587.3	20552.3	582	17641	576.7	22254.2	571.4	15362.4
592.5	18684	587.2	20345.4	581.9	17669.7	576.6	22220.3	571.3	15414.1
592.4	18547.5	587.1	20513.1	581.8	17513.6	576.5	22087	571.2	15371
592.3	18400.6	587	20617.7	581.7	17515.9	576.4	22039.8	571.1	15283.6
592.2	18516.4	586.9	20508.6	581.6	17458.1	576.3	21969.9	571	15597.2
592.1	18796.4	586.8	20397	581.5	17517.2	576.2	21553.8	570.9	15382.8
592	18684.1	586.7	20719.9	581.4	17528.7	576.1	21494.2	570.8	15372.1
591.9	18551	586.6	20816.8	581.3	17726	576	21397.2	570.7	15245.7
591.8	18511.3	586.5	20779.6	581.2	17603.2	575.9	20942.2	570.6	15341.5
591.7	18476.8	586.4	20745.1	581.1	17461.2	575.8	20581.1	570.5	15334.5
591.6	18502.4	586.3	20604.7	581	17685.1	575.7	20436	570.4	15395
591.5	18584.2	586.2	20375.4	580.9	17709.4	575.6	20091	570.3	15297
591.4	18623.9	586.1	20457.1	580.8	17824.6	575.5	19823.5	570.2	15256
591.3	18605.8	586	20407.9	580.7	17779.7	575.4	19425.2	570.1	15335.2
591.2	18581.2	585.9	20212.6	580.6	17829.1	575.3	19293.2	570	15387.5
591.1	18617.9	585.8	20280	580.5	17914.8	575.2	18699.5		
591	18674	585.7	20127	580.4	18077.6	575.1	18353.5		
590.9	18584	585.6	19980.7	580.3	18080.1	575	18178		
590.8	18798.5	585.5	19946.7	580.2	18049.1	574.9	17908.7		
590.7	18701.2	585.4	19702.4	580.1	18224.6	574.8	17641.6		
590.6	18540.1	585.3	19517.6	580	18348.4	574.7	17383.2		
590.5	18707.9	585.2	19360.2	579.9	18337	574.6	17083.7		
590.4	19023.2	585.1	19273.7	579.8	18294.3	574.5	16821.1		
590.3	18617.7	585	19117.9	579.7	18347.1	574.4	16611.9		
590.2	18755.1	584.9	18967.7	579.6	18648.2	574.3	16538.4		
590.1	18831.9	584.8	18686.4	579.5	18647.6	574.2	16246.3		
590	18697.2	584.7	18714.1	579.4	18494.9	574.1	16149.9		
589.9	18969.7	584.6	18517.4	579.3	18888.4	574	15958.4		
589.8	18744.2	584.5	18439	579.2	19020.5	573.9	15883.7		

Table 17 relationship between binding energy (eV) and residuals for Fe 800°C, 8 hr

Binding energy	Residuals	Binding energy	Residuals	Binding energy	Residuals	Binding energy	Residuals	Binding energy	Residuals
740	43908.9	734.7	38019.5	729.4	36666.2	724.1	36471.4	718.8	32407.9
739.9	43639.9	734.6	37612.1	729.3	36284.2	724	36141.4	718.7	32371.2
739.8	43601.3	734.5	37742.7	729.2	36270.2	723.9	35712.2	718.6	32493.8
739.7	43197.5	734.4	37877.3	729.1	36557	723.8	35948.2	718.5	32653.6
739.6	43045.2	734.3	37557.4	729	36151.4	723.7	35793	718.4	32222.3
739.5	43163.7	734.2	37669.8	728.9	36199.3	723.6	35317.8	718.3	32295.8
739.4	43221.6	734.1	37806.1	728.8	36186.1	723.5	35586.3	718.2	32358.8
739.3	42756.7	734	37620.5	728.7	36001.4	723.4	35775.2	718.1	32534.1
739.2	42691.4	733.9	37524.9	728.6	36370.2	723.3	35383.5	718	32754.9
739.1	42140.8	733.8	37418	728.5	36438.9	723.2	34875.3	717.9	32332.7
739	41927.7	733.7	36969.1	728.4	36371.9	723.1	35037.6	717.8	32478.2
738.9	41997.2	733.6	37372.3	728.3	36511.2	723	34933.5	717.7	32053
738.8	41613.9	733.5	37702.4	728.2	36318.6	722.9	35039.7	717.6	32163.4
738.7	41373	733.4	37473.6	728.1	36154.9	722.8	34651.6	717.5	32097
738.6	41312.6	733.3	36953.2	728	36954.7	722.7	34436.1	717.4	31981.4
738.5	41182.4	733.2	36900.9	727.9	36502.9	722.6	34700.4	717.3	32149.9
738.4	40861.8	733.1	37006	727.8	36699.6	722.5	34672.9	717.2	31940.5
738.3	40536.3	733	37088.1	727.7	36328.3	722.4	34393.9	717.1	32142.7
738.2	40499.7	732.9	37085.8	727.6	36505.9	722.3	34452.8	717	31958.8
738.1	40730.6	732.8	36924.3	727.5	36765.3	722.2	33958.5	716.9	31623
738	40633	732.7	37103.1	727.4	36520.5	722.1	33959.8	716.8	31983.7
737.9	39921.2	732.6	36797.5	727.3	36129.9	722	34070.5	716.7	32131.3
737.8	40220.1	732.5	36852.6	727.2	36769.5	721.9	34248.5	716.6	32148.6
737.7	40278.1	732.4	36788.8	727.1	36734.8	721.8	33448.6	716.5	32194.9
737.6	39859.5	732.3	36899.4	727	36880.5	721.7	33727.7	716.4	32115.1
737.5	40182.1	732.2	36567	726.9	36904.6	721.6	33348.7	716.3	32265.5
737.4	39825.5	732.1	36176.2	726.8	36690.9	721.5	33579.9	716.2	32118.9
737.3	39158.4	732	36374.2	726.7	36700.3	721.4	33143.1	716.1	32117.4
737.2	39724.3	731.9	36182.9	726.6	37069.9	721.3	33371.1	716	32421
737.1	39334.2	731.8	36571.4	726.5	36877.6	721.2	32919.2	715.9	32387.9
737	39547.8	731.7	36590.6	726.4	37031.6	721.1	33314.5	715.8	32169.1
736.9	39152.6	731.6	36447.6	726.3	37000.6	721	33114.9	715.7	31878.4
736.8	39139.7	731.5	36666.9	726.2	36550.2	720.9	33295.6	715.6	31756.1
736.7	38927.8	731.4	36724.2	726.1	36687.6	720.8	33286.4	715.5	32214.9
736.6	39017.7	731.3	36332.4	726	36920.1	720.7	33040.3	715.4	32410.8
736.5	39112.1	731.2	36562.2	725.9	36832.7	720.6	33250.5	715.3	32236
736.4	39154.5	731.1	36138.4	725.8	36651.7	720.5	33312.3	715.2	32618.3
736.3	39078.6	731	36327.1	725.7	36740.8	720.4	33131.1	715.1	32242.5
736.2	38528.3	730.9	36209.5	725.6	37073.6	720.3	32749.2	715	32170
736.1	38622.1	730.8	36460.4	725.5	37066.4	720.2	32871.1	714.9	32505.7
736	38772.7	730.7	36575.7	725.4	37176.5	720.1	32701.6	714.8	32453
735.9	39176.3	730.6	36299.1	725.3	36567.6	720	32959.4	714.7	32474.6
735.8	38876.1	730.5	36263.1	725.2	36237.5	719.9	32724.5	714.6	32423.2
735.7	38882.5	730.4	36191	725.1	36305.3	719.8	32880.3	714.5	32629.3
735.6	38119.8	730.3	36410.8	725	36789	719.7	33092.7	714.4	32848.2
735.5	38217.6	730.2	36567.8	724.9	36997.1	719.6	32830.7	714.3	32747.7
735.4	38418.5	730.1	36137.5	724.8	36290.4	719.5	32700.5	714.2	32641.6
735.3	38344.3	730	36375.5	724.7	36662.3	719.4	33079.8	714.1	32806.9
735.2	38341.1	729.9	36751.5	724.6	36457.8	719.3	33155.9	714	32566.4
735.1	38420.5	729.8	36404.9	724.5	36025.7	719.2	32633.7	713.9	33177.9
735	38146.6	729.7	36394.9	724.4	35701.2	719.1	32898.2	713.8	33219.2
734.9	37807.6	729.6	36040.3	724.3	36441.1	719	32633.4	713.7	32903.7
734.8	37757.1	729.5	36353.2	724.2	36123.2	718.9	32567.9	713.6	32873.4

Table 17(continued) relationship between binding energy (eV) and residuals for Fe 800°C, 6 hr.

Binding energy	Residuals	Binding energy	Residuals	Binding energy	Residuals
713.5	33312.1	708.2	29454.2	702.9	28604.3
713.4	33482.5	708.1	29273.8	702.8	28589.5
713.3	33599.7	708	29164.1	702.7	28945.5
713.2	33563.6	707.9	29039.4	702.6	29171.8
713.1	33461.3	707.8	29025.3	702.5	28727.5
713	33211.6	707.7	29131.3	702.4	28817.3
712.9	32997.2	707.6	28996.9	702.3	29172.7
712.8	33614.1	707.5	28787.9	702.2	28921
712.7	33828.2	707.4	28947.9	702.1	28924.9
712.6	33708.7	707.3	28920.2	702	28864.4
712.5	33872.9	707.2	28771.6	701.9	28763.2
712.4	33820	707.1	28989.7	701.8	28577.6
712.3	34071.3	707	29047.4	701.7	28858.3
712.2	34024.3	706.9	28975.2	701.6	28706
712.1	34084.4	706.8	28961.3	701.5	28910.7
712	34060.1	706.7	28644.5	701.4	28798.7
711.9	34130.1	706.6	28828.4	701.3	29053
711.8	34234.6	706.5	28830.6	701.2	29046.1
711.7	34273.7	706.4	28467.1	701.1	29186.2
711.6	34414.6	706.3	28703	701	29038.2
711.5	34540.3	706.2	28623.7	700.9	28793.6
711.4	34070	706.1	28509.6	700.8	28664.5
711.3	34285.5	706	28845.1	700.7	28884.3
711.2	34185.5	705.9	28841.4	700.6	28829.1
711.1	33882.6	705.8	28762.3	700.5	28718.9
711	33977.4	705.7	29167.9	700.4	28759.9
710.9	34057.4	705.6	28657.8	700.3	28796.2
710.8	34354.4	705.5	28545.3	700.2	28827.1
710.7	34216.2	705.4	28792	700.1	28776.7
710.6	33628.3	705.3	28638.8	700	28437.2
710.5	33544.8	705.2	28555.4		
710.4	33237.2	705.1	28535.2		
710.3	33815.2	705	28683.4		
710.2	33358	704.9	28803.6		
710.1	32949.8	704.8	28594.5		
710	32953.9	704.7	28940.1		
709.9	32671.5	704.6	28956.2		
709.8	32368.7	704.5	29146.3		
709.7	31910.2	704.4	29041.9		
709.6	32195.7	704.3	28841.4		
709.5	32189.3	704.2	28770.6		
709.4	31759	704.1	29038.8		
709.3	31625.1	704	28803.5		
709.2	31380.6	703.9	28872.3		
709.1	31070.1	703.8	28782.5		
709	30704.3	703.7	29021.6		
708.9	30273.7	703.6	29011.3		
708.8	30338.2	703.5	28826.4		
708.7	30566.9	703.4	29172		
708.6	30228	703.3	29213.7		
708.5	29990	703.2	28601.2		
708.4	29728.3	703.1	28812.1		
708.3	29617.7	703	28817.1		

Table 18 relationship between binding energy (eV) and residuals for Cr 800°C, 12 hr

Binding energy	Residuals	Binding energy	Residuals	Binding energy	Residuals	Binding energy	Residuals	Binding energy	Residuals
595	14200.5	589.7	13589.4	584.4	13391.9	579.1	13619.9	573.8	13105.1
594.9	13927.2	589.6	13732.6	584.3	13376.6	579	13680.9	573.7	12916.9
594.8	13921.6	589.5	13780.4	584.2	13235	578.9	13656.6	573.6	13138.5
594.7	14239.1	589.4	13808	584.1	13307.9	578.8	13704.4	573.5	13137
594.6	14043.5	589.3	13708.4	584	13359.9	578.7	13884	573.4	12913.2
594.5	13920	589.2	13740.3	583.9	13204	578.6	13949.6	573.3	12947.5
594.4	13935.3	589.1	13668.5	583.8	13271.1	578.5	13911.7	573.2	13136.7
594.3	13776.4	589	13714.1	583.7	13416.6	578.4	13805.5	573.1	13165.4
594.2	13985.7	588.9	13957.5	583.6	13391	578.3	13790.9	573	12982.6
594.1	13932.9	588.8	13757.8	583.5	13512.6	578.2	13773.3	572.9	12971.1
594	14016.4	588.7	13810.9	583.4	13385.7	578.1	13724.8	572.8	12835.4
593.9	13832.7	588.6	13801.8	583.3	13429.3	578	13618.4	572.7	13041.7
593.8	13784	588.5	13783.7	583.2	13257	577.9	13898.5	572.6	13051.4
593.7	13830.9	588.4	13791.5	583.1	13192.1	577.8	13927.1	572.5	13026.4
593.6	13954.5	588.3	13771.8	583	13256.2	577.7	13964.5	572.4	12927.4
593.5	13882.9	588.2	13656.7	582.9	13261.2	577.6	14102.5	572.3	12965.4
593.4	13950.1	588.1	13687.4	582.8	13222.6	577.5	13999.5	572.2	12990.8
593.3	13875.3	588	13814.9	582.7	13182.6	577.4	13818.4	572.1	12937.2
593.2	13756.5	587.9	13897.5	582.6	13299.9	577.3	13760.8	572	12795.6
593.1	13788.3	587.8	13746.2	582.5	13212.5	577.2	13769.4	571.9	12904.7
593	13736.4	587.7	13826.8	582.4	13320.7	577.1	13697.4	571.8	13000
592.9	13753.8	587.6	13696.3	582.3	13431.4	577	13705.4	571.7	13057.1
592.8	13781.9	587.5	13673.7	582.2	13550.4	576.9	13571.4	571.6	12945.3
592.7	13802.1	587.4	13806.3	582.1	13311	576.8	13574.9	571.5	12889.9
592.6	13788.9	587.3	13814.1	582	13189.5	576.7	13662.4	571.4	12882.4
592.5	13703.5	587.2	13726.1	581.9	13173.9	576.6	13586	571.3	12945.7
592.4	13692.2	587.1	13754.3	581.8	13386.8	576.5	13558.4	571.2	12942
592.3	13721.8	587	13752.2	581.7	13376.7	576.4	13559.3	571.1	12873.4
592.2	13810.6	586.9	13695.7	581.6	13315.2	576.3	13402.7	571	12936.7
592.1	13884.2	586.8	13584.9	581.5	13353.1	576.2	13358.9	570.9	12948.9
592	13805.8	586.7	13597.3	581.4	13426.2	576.1	13187.3	570.8	12805.3
591.9	13734.4	586.6	13507.2	581.3	13444.8	576	13279.8	570.7	12886.6
591.8	13806	586.5	13628.4	581.2	13305.9	575.9	13227	570.6	12673.2
591.7	13765.1	586.4	13520	581.1	13253.7	575.8	13292.6	570.5	12772.1
591.6	13725.2	586.3	13661.5	581	13218.4	575.7	13368.9	570.4	12735.1
591.5	13836.3	586.2	13560.5	580.9	13273.4	575.6	13234.8	570.3	12880
591.4	13656.1	586.1	13362.5	580.8	13352.1	575.5	13109.5	570.2	12820.1
591.3	13819.4	586	13519.4	580.7	13399.1	575.4	13294.8	570.1	12708.4
591.2	13750.2	585.9	13423	580.6	13306.9	575.3	13184.1	570	12752.3
591.1	13624.6	585.8	13385	580.5	13354.5	575.2	13209.7		
591	13808.3	585.7	13391.2	580.4	13313.5	575.1	13122.2		
590.9	13860.1	585.6	13415.5	580.3	13350.9	575	13168.4		
590.8	13642.6	585.5	13367.4	580.2	13422.9	574.9	12917.9		
590.7	13772.5	585.4	13526.3	580.1	13506.9	574.8	13168.4		
590.6	13909	585.3	13380.6	580	13516.5	574.7	12980.3		
590.5	13668.9	585.2	13365.9	579.9	13611.6	574.6	13123.4		
590.4	13677.3	585.1	13437	579.8	13516	574.5	13022.8		
590.3	13668.3	585	13310.1	579.7	13555.8	574.4	13091.2		
590.2	13627.6	584.9	13332.4	579.6	13572.5	574.3	13082.4		
590.1	13784.1	584.8	13330.4	579.5	13602	574.2	13106.1		
590	13786.6	584.7	13371.9	579.4	13571.1	574.1	12909		
589.9	13818.6	584.6	13321.7	579.3	13535.8	574	13118.9		
589.8	13684.3	584.5	13348.9	579.2	13795.7	573.9	13051.4		

Table 19 relationship between binding energy (eV) and residuals for Cr-Chromium electroplating oxidized 800°C, 12 hr

Binding energy	Residuals	Binding energy	Residuals	Binding energy	Residuals	Binding energy	Residuals	Binding energy	Residuals
595	16349.6	589.7	15989.4	584.4	15279	579.1	15727.1	573.8	14260.5
594.9	16411.7	589.6	16068	584.3	15231.1	579	15710.7	573.7	14250.6
594.8	16391.7	589.5	16133.9	584.2	15134.2	578.9	15860.2	573.6	14267.4
594.7	16368.4	589.4	15929.8	584.1	15135	578.8	15940.1	573.5	14281.9
594.6	16476.8	589.3	16009.6	584	14993	578.7	16120.6	573.4	14313.4
594.5	16516.1	589.2	16231.8	583.9	15053.6	578.6	16110.1	573.3	14200.7
594.4	16438.3	589.1	16267	583.8	15265.3	578.5	16224.1	573.2	14147.6
594.3	16379.2	589	16179	583.7	15081.3	578.4	16246.8	573.1	14045.5
594.2	16428.5	588.9	16011	583.6	15296.6	578.3	16375.8	573	14300.4
594.1	16335.5	588.8	16146.3	583.5	15168.8	578.2	16544.7	572.9	14326
594	16337.1	588.7	16282	583.4	15021.7	578.1	16516.1	572.8	14200.8
593.9	16438.7	588.6	16099	583.3	15101.5	578	16572.9	572.7	14298.5
593.8	16218	588.5	16032.8	583.2	14863.8	577.9	16623.9	572.6	14205
593.7	16278.6	588.4	16243.3	583.1	15082.8	577.8	16761.2	572.5	14205.9
593.6	16158	588.3	16180.2	583	15064.4	577.7	16769.6	572.4	14183.9
593.5	16184.6	588.2	16108.6	582.9	15148	577.6	16742.5	572.3	14236.6
593.4	16306.8	588.1	16204.8	582.8	15073.5	577.5	16978.2	572.2	14163.1
593.3	16350.6	588	16415.7	582.7	15047.4	577.4	17066	572.1	14143.7
593.2	16247.8	587.9	16557.9	582.6	14992.9	577.3	17111.1	572	14154.3
593.1	16326.5	587.8	16442.5	582.5	14933.6	577.2	17196.1	571.9	14229.3
593	16325.5	587.7	16553.6	582.4	14995.2	577.1	17210.4	571.8	14308.1
592.9	16237.5	587.6	16790.7	582.3	15067.1	577	17236.6	571.7	14339.3
592.8	16068	587.5	16546.7	582.2	15062.8	576.9	17177.2	571.6	14234.6
592.7	16013.5	587.4	16441.9	582.1	14888.8	576.8	17152.5	571.5	14175.4
592.6	16020.3	587.3	16375.4	582	14850.3	576.7	16969.3	571.4	14237.4
592.5	16126.1	587.2	16595.5	581.9	14949.2	576.6	16959.6	571.3	14320.3
592.4	16073.3	587.1	16611.3	581.8	15074.9	576.5	16981.4	571.2	14052.5
592.3	16091.8	587	16667.8	581.7	15089.5	576.4	16931.5	571.1	14051.3
592.2	16173.4	586.9	16740.2	581.6	15100	576.3	16745.2	571	14008
592.1	16119.6	586.8	16614.1	581.5	15044.6	576.2	16657.2	570.9	14042.4
592	16067.1	586.7	16459.2	581.4	15082	576.1	16762.8	570.8	14064.3
591.9	16169.7	586.6	16358.2	581.3	14944.9	576	16596.1	570.7	14118.2
591.8	16259.8	586.5	16434.3	581.2	14939.4	575.9	16214.1	570.6	14059.9
591.7	16075.6	586.4	16473.9	581.1	15124.4	575.8	15986.2	570.5	14117.6
591.6	16058.3	586.3	16451	581	15295.3	575.7	16075.9	570.4	13962.3
591.5	16158	586.2	16368.9	580.9	15196.7	575.6	15970.5	570.3	14027
591.4	16051.6	586.1	16251.5	580.8	15132	575.5	15810.7	570.2	14124.4
591.3	15899.8	586	16361.8	580.7	15128.6	575.4	15601.3	570.1	14220.5
591.2	15976.8	585.9	16417	580.6	15215.1	575.3	15394.2	570	14123.2
591.1	16039	585.8	16090.1	580.5	15230.3	575.2	15527.2		
591	16051.2	585.7	16038.4	580.4	15073.4	575.1	15206.2		
590.9	16002	585.6	15877.6	580.3	15280	575	15162.2		
590.8	15937.3	585.5	15831.4	580.2	15172	574.9	15001.9		
590.7	16065.8	585.4	15835.6	580.1	15096.1	574.8	14829.1		
590.6	15993	585.3	15704.2	580	15142.1	574.7	14826.2		
590.5	16080.4	585.2	15664.2	579.9	15265.7	574.6	14782.1		
590.4	16015.3	585.1	15673.7	579.8	15455.2	574.5	14610.1		
590.3	15923.1	585	15696.5	579.7	15430.7	574.4	14564.1		
590.2	16019.5	584.9	15592.9	579.6	15470	574.3	14460.7		
590.1	16033.1	584.8	15466.4	579.5	15535.3	574.2	14420.3		
590	16170.6	584.7	15415.4	579.4	15589.9	574.1	14495.3		
589.9	16163.3	584.6	15201.6	579.3	15682.3	574	14333.7		
589.8	15899.2	584.5	15190.8	579.2	15797.2	573.9	14400.9		

Table 20 relationship between binding energy (eV) and residuals for Fe- Chromium electroplating oxidized 800°C, 12 hr

Binding energy	Residuals	Binding energy	Residuals	Binding energy	Residuals	Binding energy	Residuals	Binding energy	Residuals
740	46202.7	734.7	40260.3	729.4	38736.8	724.1	39485.5	718.8	35524.2
739.9	46101.7	734.6	40132.4	729.3	38628.9	724	38977.9	718.7	35631.7
739.8	45845	734.5	40179.2	729.2	38724.5	723.9	38909.9	718.6	35514.2
739.7	46280.1	734.4	40657.5	729.1	38115.2	723.8	38768.3	718.5	35570.7
739.6	45956.1	734.3	40166.1	729	38031.9	723.7	38446.3	718.4	35658
739.5	45745.2	734.2	40195.9	728.9	38445.8	723.6	38667.7	718.3	35798.6
739.4	44870	734.1	40410.9	728.8	38417.9	723.5	38470.1	718.2	35479.8
739.3	44477.4	734	40314.2	728.7	38215.5	723.4	38512.1	718.1	35542.6
739.2	44696.3	733.9	40050.5	728.6	38539.7	723.3	38203.2	718	35363.2
739.1	44539.4	733.8	40261.6	728.5	38573.7	723.2	37837.7	717.9	35340.2
739	44300.8	733.7	40379.2	728.4	38454.2	723.1	37972.8	717.8	34910.1
738.9	43859.8	733.6	40054.7	728.3	38389.4	723	37559.3	717.7	34898.2
738.8	43695.8	733.5	39802.1	728.2	38228.9	722.9	37543.1	717.6	34787.2
738.7	43615.4	733.4	40095.7	728.1	38471.3	722.8	37846.8	717.5	35433.4
738.6	43657.1	733.3	39991.9	728	38361.3	722.7	37645.5	717.4	35313.4
738.5	43522.2	733.2	39436.4	727.9	38645.4	722.6	37346	717.3	35096.7
738.4	43402.7	733.1	39605.8	727.8	38690.4	722.5	36422	717.2	35183.4
738.3	43371	733	39720	727.7	38782.3	722.4	36576.3	717.1	35442.1
738.2	43143.1	732.9	39404.6	727.6	38639.3	722.3	36564.9	717	34977.6
738.1	43295.5	732.8	39089	727.5	38866.8	722.2	36431	716.9	35222.8
738	42693.5	732.7	39340.5	727.4	38704.7	722.1	36247.2	716.8	35461.8
737.9	42528.6	732.6	39596.8	727.3	38753.1	722	36571.1	716.7	35383
737.8	42332.7	732.5	39171.7	727.2	39565.7	721.9	36563.8	716.6	34604.3
737.7	42452.6	732.4	39318.2	727.1	39272.5	721.8	36045.8	716.5	34830.7
737.6	42224.4	732.3	39579.1	727	39363.4	721.7	35848.5	716.4	35069.3
737.5	42712.5	732.2	39327.7	726.9	39043	721.6	36187.5	716.3	34621.6
737.4	42428.2	732.1	39177.3	726.8	39342.8	721.5	35714.3	716.2	34767.8
737.3	41796.2	732	38978	726.7	39507.8	721.4	35778.8	716.1	35254.2
737.2	41587.4	731.9	38892.1	726.6	39512.5	721.3	36077.1	716	35039.1
737.1	41557.5	731.8	38932.1	726.5	39159.3	721.2	36050.9	715.9	34928.6
737	41899	731.7	38815.4	726.4	39385.6	721.1	35763.7	715.8	35214.8
736.9	41943.4	731.6	38743.3	726.3	38983.9	721	36011.6	715.7	35331.3
736.8	41963.2	731.5	38482.1	726.2	39160.8	720.9	35902.7	715.6	35109.2
736.7	41439.7	731.4	38745.6	726.1	39068.3	720.8	35897.3	715.5	35121.5
736.6	41622.5	731.3	38719.6	726	39603.1	720.7	35993	715.4	35245.3
736.5	41600.1	731.2	38764.3	725.9	39587.8	720.6	35917.9	715.3	35497.2
736.4	41756.1	731.1	38793.1	725.8	39742.6	720.5	35976.2	715.2	35389
736.3	41264	731	39023.6	725.7	39383.1	720.4	35825.7	715.1	35484.2
736.2	41393.2	730.9	38750.2	725.6	39612.8	720.3	35864.4	715	35698.9
736.1	41510.7	730.8	38161.8	725.5	39684.2	720.2	35845	714.9	35519.3
736	41031.4	730.7	38445	725.4	39639.8	720.1	35517.1	714.8	35794.9
735.9	40838.8	730.6	38423.7	725.3	39860.7	720	35373.9	714.7	35200
735.8	41082.8	730.5	38233.3	725.2	40106.4	719.9	35843.8	714.6	35867.3
735.7	40792.2	730.4	38512.2	725.1	39849.8	719.8	35629.7	714.5	35969.9
735.6	40916.7	730.3	38912	725	39323.6	719.7	35732.2	714.4	35561.8
735.5	40599.4	730.2	38474.4	724.9	39577.6	719.6	35735.7	714.3	35855.1
735.4	40481.7	730.1	38747.4	724.8	39471.6	719.5	36043.9	714.2	36163.7
735.3	40416.3	730	38545.4	724.7	39746.8	719.4	35743.7	714.1	36189.7
735.2	40580.7	729.9	38568.9	724.6	39718.3	719.3	35921.2	714	36142.2
735.1	40231.8	729.8	38439.4	724.5	39786.9	719.2	35695.8	713.9	36755.5
735	40111.9	729.7	38592.3	724.4	39881.6	719.1	35493.3	713.8	36440.3
734.9	40445.5	729.6	38357.4	724.3	39815.2	719	35761.2	713.7	36717
734.8	40755	729.5	38362.2	724.2	39520.6	718.9	35609.3	713.6	37002.7

Table 20(continued) relationship between binding energy (eV) and residuals for Fe-Chromium electroplating oxidized 800°C, 12 hr.

Binding energy	Residuals	Binding energy	Residuals	Binding energy	Residuals
713.5	36758.7	708.2	30451.2	702.9	29743.6
713.4	37308.8	708.1	30461.8	702.8	29811.5
713.3	37161	708	30436.2	702.7	29664.5
713.2	37565.6	707.9	30225.7	702.6	29616.6
713.1	37274	707.8	30318.6	702.5	30100.3
713	37409.9	707.7	30079.9	702.4	30075.9
712.9	38008.8	707.6	30233.8	702.3	29742.9
712.8	37614.7	707.5	29960.9	702.2	29727.2
712.7	37486.8	707.4	29918	702.1	30037.6
712.6	38080.9	707.3	29644	702	30017.2
712.5	38158	707.2	29787.8	701.9	29677.4
712.4	38403.3	707.1	29864.5	701.8	29750.3
712.3	38439.2	707	29759.2	701.7	29757.9
712.2	38718.9	706.9	29814.6	701.6	30207.4
712.1	38496.1	706.8	29839	701.5	30015.6
712	38489	706.7	29810.3	701.4	29742.2
711.9	38508.1	706.6	29716.1	701.3	29715.2
711.8	38773.6	706.5	29705.7	701.2	29432.3
711.7	38595.6	706.4	30087.4	701.1	29624.5
711.6	38739.6	706.3	29771.6	701	29772
711.5	38874	706.2	29887.1	700.9	29377
711.4	38919.9	706.1	29840.9	700.8	29166.4
711.3	39229.3	706	29967.1	700.7	29286.7
711.2	38969.6	705.9	29833.9	700.6	29498.3
711.1	38881.9	705.8	29725.2	700.5	29168.4
711	38886.1	705.7	30021.3	700.4	29158.6
710.9	38756.3	705.6	29614	700.3	29142.5
710.8	38645.4	705.5	29806.6	700.2	29119.7
710.7	38543.3	705.4	30020.6	700.1	29112.3
710.6	38753.2	705.3	29605.2	700	29139.4
710.5	38391.7	705.2	29437		
710.4	38287.6	705.1	29879.7		
710.3	37842.3	705	29749.8		
710.2	37474.9	704.9	29976.7		
710.1	37078.2	704.8	29798.9		
710	37104.6	704.7	29683.4		
709.9	36449.2	704.6	29932.9		
709.8	35914.6	704.5	29968.9		
709.7	35593.2	704.4	29979.3		
709.6	35581.6	704.3	29549.2		
709.5	34680.2	704.2	29825.2		
709.4	33900.6	704.1	29857.9		
709.3	33789.3	704	29641		
709.2	33515.9	703.9	29500.4		
709.1	33028.7	703.8	29589.5		
709	32502.8	703.7	29533.2		
708.9	32116.8	703.6	29621.1		
708.8	31779.8	703.5	29903.6		
708.7	31525.1	703.4	30042.6		
708.6	31392	703.3	30016.8		
708.5	31115.6	703.2	29795.1		
708.4	30921.9	703.1	29833.3		
708.3	30769.3	703	29561.3		

Table 21 relationship between binding energy (eV) and residuals for Cr-CrN sputtering

Binding energy	Residuals	Binding energy	Residuals	Binding energy	Residuals	Binding energy	Residuals	Binding energy	Residuals
595	21495.4	589.7	19936.1	584.4	22472	579.1	19408.1	573.8	15346.2
594.9	21313.1	589.6	19851.7	584.3	22217.1	579	19804.7	573.7	14755.4
594.8	21097.9	589.5	20400.7	584.2	21784.7	578.9	20451.2	573.6	14245.7
594.7	21088.3	589.4	20496	584.1	21451.2	578.8	20499.8	573.5	13968.2
594.6	21041.1	589.3	20697.3	584	21093	578.7	20854.5	573.4	13275.3
594.5	20900.4	589.2	20893.1	583.9	20675.2	578.6	21150.6	573.3	13011
594.4	20521.2	589.1	20926.7	583.8	20101.1	578.5	21290.6	573.2	12645.2
594.3	20411.9	589	20923.1	583.7	19660	578.4	21676.7	573.1	12558.4
594.2	20679.6	588.9	20590.4	583.6	19745.4	578.3	22256.7	573	12456.6
594.1	20549.6	588.8	20832.4	583.5	19339.9	578.2	22570.4	572.9	12218.7
594	20532.5	588.7	21103.5	583.4	18942.1	578.1	22985	572.8	12117.7
593.9	20581.3	588.6	21104.9	583.3	18889.5	578	23201.6	572.7	12158.4
593.8	20287.9	588.5	21233.9	583.2	18528.8	577.9	23525.7	572.6	12087.6
593.7	20501.4	588.4	21220.5	583.1	17901.9	577.8	24005.7	572.5	11806.7
593.6	20068.4	588.3	21750	583	18113.7	577.7	24438.6	572.4	11791.1
593.5	20199.6	588.2	22003.2	582.9	17912.6	577.6	25038.6	572.3	11681.6
593.4	20379.8	588.1	21832.1	582.8	17877.5	577.5	25404.4	572.2	11682.6
593.3	20304.1	588	22258.1	582.7	17713.5	577.4	26040.3	572.1	11792.2
593.2	20061.1	587.9	22443	582.6	17707.3	577.3	26527.9	572	11772.1
593.1	19975.1	587.8	22684.1	582.5	17486.3	577.2	26986	571.9	11672.2
593	19641.1	587.7	22409.5	582.4	17313.9	577.1	27503.8	571.8	11448.6
592.9	19915.3	587.6	22469.1	582.3	17245.2	577	27777.1	571.7	11644.4
592.8	19917.2	587.5	22867.4	582.2	17072.5	576.9	28192.1	571.6	11529.6
592.7	19862.5	587.4	23411.5	582.1	17315.2	576.8	28718.4	571.5	11702.1
592.6	19582.4	587.3	23269.3	582	17196.2	576.7	28951.4	571.4	11665.3
592.5	19913.9	587.2	23491.8	581.9	17036.1	576.6	29492.1	571.3	11534.2
592.4	19841.3	587.1	23690.1	581.8	16842.6	576.5	29663.4	571.2	11534.3
592.3	19734.6	587	23913.5	581.7	17046.4	576.4	29733.6	571.1	11483.9
592.2	19500.2	586.9	23883.9	581.6	17063.8	576.3	29720.3	571	11486.3
592.1	19463	586.8	24034.6	581.5	17084.4	576.2	30026	570.9	11649.2
592	19729.7	586.7	24024.8	581.4	17123.7	576.1	30047.8	570.8	11616.9
591.9	19822.1	586.6	24383.7	581.3	17106.5	576	30024.6	570.7	11640.9
591.8	19590.2	586.5	24576.4	581.2	17232.5	575.9	29960.6	570.6	11548.1
591.7	19768.5	586.4	24433.4	581.1	17215.8	575.8	29587.4	570.5	11665.2
591.6	19758.1	586.3	24763.3	581	17231.4	575.7	29439.7	570.4	11593
591.5	19625.8	586.2	25284.4	580.9	17238.5	575.6	29086.8	570.3	11616.4
591.4	19489.4	586.1	25409.7	580.8	17270.1	575.5	28602.7	570.2	11798.7
591.3	19350.9	586	25412.6	580.7	17626	575.4	28187.7	570.1	11588.4
591.2	19531.8	585.9	24929.1	580.6	17467.6	575.3	27119.6	570	11381.4
591.1	19797.4	585.8	25551.9	580.5	17752.3	575.2	26723.3		
591	19637.8	585.7	25635.7	580.4	17677.2	575.1	25882.1		
590.9	19381.9	585.6	25322	580.3	17409.9	575	25476.8		
590.8	19876.9	585.5	25429.7	580.2	17640.7	574.9	24678.6		
590.7	20025.6	585.4	25306.8	580.1	17923	574.8	23794.9		
590.6	19863.2	585.3	25293.4	580	18050.1	574.7	22669.2		
590.5	20119.9	585.2	24999.2	579.9	18235.6	574.6	21824.8		
590.4	20144.8	585.1	25191.2	579.8	18115.2	574.5	20999.3		
590.3	19688.5	585	24557.5	579.7	18387.6	574.4	19824.8		
590.2	19907.9	584.9	24364.7	579.6	18532.5	574.3	18855.7		
590.1	20095.8	584.8	23977.6	579.5	18889.4	574.2	18162		
590	19909.5	584.7	23751.1	579.4	19212.6	574.1	17615.1		
589.9	19809.5	584.6	23487.1	579.3	19132.2	574	16671.3		
589.8	20127.4	584.5	22909	579.2	19488.2	573.9	16228		

Table 21 relationship between binding energy (eV) and residuals for N- CrN sputtering

Binding energy	Residuals	Binding energy	Residuals	Binding energy	Residuals	Binding energy	Residuals
410	6801.15	404.7	6351.1	399.4	7269.4	394.1	5735.05
409.9	6676.4	404.6	6432.35	399.3	7357.8	394	5594.45
409.8	6562.4	404.5	6447.7	399.2	7503.3	393.9	5762
409.7	6742.7	404.4	6277.35	399.1	7374.9	393.8	5762.75
409.6	6739.05	404.3	6170.1	399	7627.25	393.7	5596.8
409.5	6758.15	404.2	6411.2	398.9	7554.05	393.6	5660.15
409.4	6411.35	404.1	6304.3	398.8	7574	393.5	5596.6
409.3	6642.3	404	6263.6	398.7	7911.4	393.4	5547.85
409.2	6702.8	403.9	6199.45	398.6	7988.7	393.3	5493.85
409.1	6611.7	403.8	6337.6	398.5	8187.05	393.2	5515.35
409.0	6603.05	403.7	6294.05	398.4	8243.35	393.1	5529.75
408.9	6609.4	403.6	6327.45	398.3	8449.55	393	5504.9
408.8	6589.8	403.5	6188.25	398.2	8713.05	392.9	5431.3
408.7	6590.35	403.4	6200.2	398.1	8909.8	392.8	5540.6
408.6	6554.3	403.3	6317.7	398	9269.2	392.7	5693.3
408.5	6545.35	403.2	6305.2	397.9	9624.3	392.6	5891.35
408.4	6626.65	403.1	6344.8	397.8	9785.65	392.5	5570.9
408.3	6726.6	403	6520.15	397.7	10074.2	392.4	5487.3
408.2	6783.6	402.9	6380.15	397.6	10697.8	392.3	5475.15
408.1	6594	402.8	6287.1	397.5	10936.5	392.2	5486.4
408	6814.9	402.7	6300.45	397.4	11158.4	392.1	5486.35
407.9	6637.45	402.6	6272.8	397.3	11507	392	5459.7
407.8	6576.2	402.5	6345.9	397.2	11608.4	391.9	5561
407.7	6599.7	402.4	6534.8	397.1	11837.6	391.8	5534.75
407.6	6614.7	402.3	6219.1	397	11852.1	391.7	5549.75
407.5	6635.55	402.2	6342.3	396.9	11985.2	391.6	5625.85
407.4	6724.6	402.1	6475.1	396.8	12478.4	391.5	5563.75
407.3	6610.55	402	6322.1	396.7	12104	391.4	5530.45
407.2	6560.75	401.9	6298.7	396.6	11986.4	391.3	5628.05
407.1	6531.25	401.8	6485.2	396.5	11932.1	391.2	5507.3
407	6502.95	401.7	6492.6	396.4	11345.7	391.1	5603.9
406.9	6549.35	401.6	6219.05	396.3	11215.9	391	5461.25
406.8	6564.3	401.5	6484.45	396.2	10933.2	390.9	5547.65
406.7	6580.85	401.4	6617.35	396.1	10632.8	390.8	5682.8
406.6	6605.3	401.3	6437.5	396	9967.7	390.7	5540.4
406.5	6565.8	401.2	6358	395.9	9565.3	390.6	5612.65
406.4	6635.1	401.1	6287.75	395.8	9236.9	390.5	5573.35
406.3	6507.8	401	6481.45	395.7	8818.35	390.4	5584.55
406.2	6595.4	400.9	6492.6	395.6	8408.9	390.3	5548.2
406.1	6578.25	400.8	6510.9	395.5	7837.6	390.2	5466.25
406	6354.85	400.7	6546.8	395.4	7542.9	390.1	5649.8
405.9	6466.15	400.6	6801.8	395.3	7347.4	390	5671.15
405.8	6598.9	400.5	6864.4	395.2	6925.25		
405.7	6481.35	400.4	6853.15	395.1	6708.45		
405.6	6396.15	400.3	6890.2	395	6479.65		
405.5	6470.45	400.2	6934.95	394.9	6315.4		
405.4	6508.4	400.1	7018.85	394.8	6239.1		
405.3	6434.6	400	6896.9	394.7	6130.15		
405.2	6282.95	399.9	6964.2	394.6	5953.4		
405.1	6250.75	399.8	7072.45	394.5	5891.55		
405	6403.75	399.7	7157.35	394.4	5849.9		
404.9	6238.45	399.6	7051.3	394.3	5749.5		
404.8	6163.95	399.5	7234.35	394.2	5835.95		

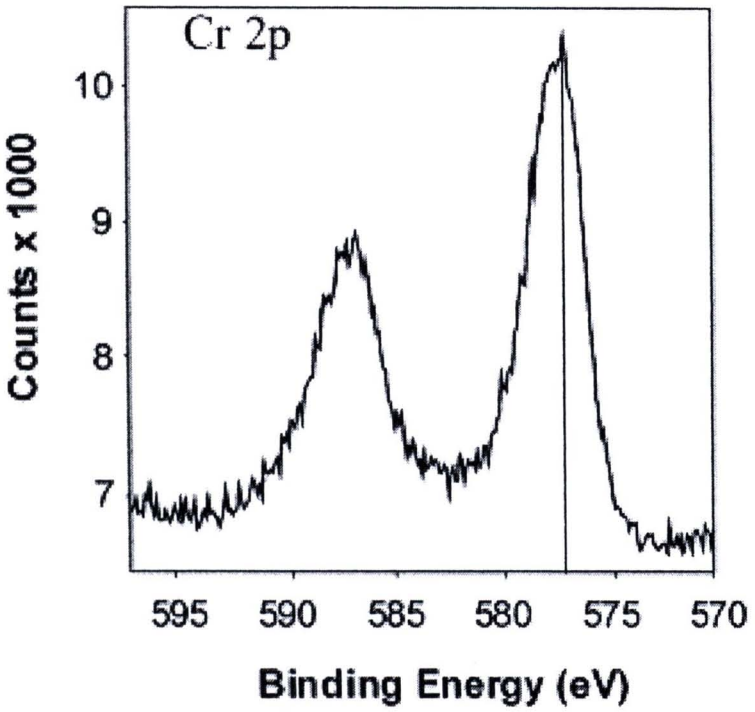

Fig. A-1. Narrow scan XPS spectrum of Cr 2p for promoted skeletal Cr sample.

As standard Cr2p3 peak binding energy given at 577.5

Table 22 Metal distribution in the palladium membrane heated at 450, 500 and 550°C.

Support			Pd layer (%)				Interlayer (%)				Stainless steel (%)			
			Pd	Fe	Cr	Ni	Pd	Fe	Cr	Ni	Pd	Fe	Cr	Ni
No barrier, unoxidized, Ar-exposed	450°C	1	96,90	2,24	0,39	0,47					1,72	70,22	17,91	10,15
		2	95,77	2,95	0,83	0,45					0,09	70,91	19,24	9,76
		3	96,61	2,03	0,77	0,58					0,19	71,01	18,97	9,84
		Av	**96,43**	**2,41**	**0,66**	**0,50**					**0,67**	**70,71**	**18,71**	**9,92**
		SD	**0,59**	**0,48**	**0,24**	**0,07**					**0,91**	**0,43**	**0,70**	**0,21**
	500°	1	88,18	7,49	3,44	0,89					0,09	70,57	19,33	10,01
		2	87,10	8,26	3,64	1,00					0,00	71,12	19,41	9,47
		3	87,48	8,25	3,63	0,64								
		4	86,93	7,97	4,07	1,03								
		Av	**87,42**	**7,99**	**3,70**	**0,89**					**0,05**	**70,85**	**19,37**	**9,74**
		SD	**0,55**	**0,36**	**0,27**	**0,18**					**0,06**	**0,39**	**0,06**	**0,38**
	550°C	1	73,06	22,58	2,96	1,40					0,01	71,68	19,56	8,75
		2	83,56	10,48	4,49	1,47					0,00	70,40	19,37	10,23
		3	72,80	21,54	4,33	1,33								
		4	75,72	20,29	3,07	0,92								
		Av	**73,86**	**21,47**	**3,45**	**1,22**					**0,01**	**71,04**	**19,47**	**9,49**
		SD	**1,62**	**1,15**	**0,76**	**0,26**					**0,01**	**0,91**	**0,13**	**1,05**
Cr_2O_3, direct oxidation, Ar-exposed	450°C	1	98,57	0,93	0,16	0,34					0,17	71,17	18,76	9,91
		2	97,97	0,72	0,40	0,91					0,00	71,24	18,58	10,19
		3	99,12	0,59	0,29	0,00								
		4	99,22	0,61	0,17	0,00								
		Av	**98,72**	**0,71**	**0,26**	**0,31**					**0,09**	**71,21**	**18,67**	**10,05**
		SD	**0,58**	**0,16**	**0,11**	**0,43**					**0,12**	**0,05**	**0,13**	**0,20**
	500°C	1	97,03	2,02	0,54	0,40					0,17	70,61	19,26	9,97
		2	97,09	1,94	0,45	0,52					0,02	70,44	19,51	10,02
		3	97,48	1,62	0,29	0,61								
		4	97,98	1,33	0,69	0,00								
		Av	**97,40**	**1,73**	**0,49**	**0,38**					**0,10**	**70,53**	**19,39**	**10,00**
		SD	**0,44**	**0,32**	**0,17**	**0,27**					**0,11**	**0,12**	**0,18**	**0,04**
	550°C	1	97,57	1,91	0,18	0,34					0,11	71,51	18,52	9,86
		2	96,91	2,28	0,27	0,54					0,10	71,54	18,70	9,65
		3	96,16	2,35	0,59	0,94								
		4	97,12	2,08	0,10	0,70								
		Av	**96,94**	**2,16**	**0,29**	**0,63**					**0,11**	**71,53**	**18,61**	**9,76**
		SD	**0,59**	**0,20**	**0,21**	**0,25**					**0,01**	**0,02**	**0,13**	**0,15**

Values in shaded cells were not used in calculation due to high deviation. Note that the Cr2O3 interlayer formed via direct oxidation was too thin to be visible under SEM therefore its metal distributions were not determined.

Table 23 (continued) Metal distribution in the palladium membrane heated at 450, 500 and 550°C.

Support			Pd layer (%)				Interlayer (%)				Stainless steel (%)			
			Pd	Fe	Cr	Ni	Pd	Fe	Cr	Ni	Pd	Fe	Cr	Ni
Cr_2O_3, oxidized Cr-electroplating, Ar-exposed	450°C	1	99,50	0,22	0,28	0,00	0,00	0,36	99,59	0,05	0,00	70,32	18,61	11,07
		2	99,03	0,16	0,47	0,34	0,21	0,07	99,72	0,00	0,00	70,75	18,57	10,68
		3	99,06	0,40	0,55	0,00	0,23	0,25	99,34	0,17				
		4	97,21	1,18	1,46	0,15								
		Avg	**99,20**	**0,26**	**0,43**	**0,11**	**0,15**	**0,23**	**99,55**	**0,07**	**0,00**	**70,54**	**18,59**	**10,88**
		SD	**0,26**	**0,12**	**0,14**	**0,20**	**0,13**	**0,15**	**0,19**	**0,09**	**0,00**	**0,30**	**0,03**	**0,28**
	500°C	1	98,37	1,05	0,25	0,33	0,39	0,22	98,93	0,46	0,00	71,83	16,92	11,25
		2	99,15	0,51	0,34	0,00	1,25	0,39	98,32	0,04	0,02	72,21	15,82	11,99
		3	99,11	0,63	0,18	0,08	0,63	0,85	98,52	0,00				
		4	98,55	0,99	0,21	0,25								
		Avg	**98,80**	**0,80**	**0,25**	**0,17**	**0,76**	**0,49**	**98,59**	**0,17**	**0,01**	**72,02**	**16,37**	**11,62**
		SD	**0,39**	**0,27**	**0,07**	**0,15**	**0,44**	**0,33**	**0,31**	**0,25**	**0,01**	**0,27**	**0,78**	**0,52**
	550°C	1	98,66	0,86	0,20	0,27	0,35	0,38	98,27	1,00	0,22	67,09	23,25	9,44
		2	98,61	0,87	0,34	0,18	0,38	0,41	98,25	0,96	0,50	70,54	18,10	9,87
		3	97,60	1,55	0,41	0,45	0,31	0,16	98,69	0,84				
		4	98,56	0,89	0,25	0,31								
		Avg	**98,36**	**1,04**	**0,30**	**0,30**	**0,35**	**0,32**	**98,40**	**0,93**	**0,36**	**68,82**	**20,68**	**9,66**
		SD	**0,51**	**0,34**	**0,09**	**0,11**	**0,04**	**0,14**	**0,25**	**0,08**	**0,20**	**2,44**	**3,64**	**0,30**
Cr_2O_3, oxidized Cr-sputtering, Ar-exposed	450°C	1	97,99	1,49	0,20	0,32	2,78	56,93	30,14	10,15	0,00	71,57	18,27	10,42
		2	98,22	1,32	0,38	0,08	5,69	58,17	31,23	4,91	0,14	70,92	18,30	10,64
		3	98,69	1,16	0,07	0,08	4,13	60,60	30,58	4,69	0,15	70,79	18,34	10,72
		Avg	**98,30**	**1,32**	**0,22**	**0,16**	**Err**	**Err**	**Err**	**Err**	**0,10**	**71,09**	**18,30**	**10,59**
		SD	**0,36**	**0,17**	**0,16**	**0,14**	**Err**	**Err**	**Err**	**Err**	**0,08**	**0,42**	**0,04**	**0,16**
	500°C	1	98,00	1,54	0,46	0,00	6,10	9,26	83,17	1,11	0,00	71,42	18,38	10,20
		2	97,94	1,40	0,46	0,20	4,89	23,66	68,79	2,66	0,27	71,46	17,81	10,46
		3	98,46	0,73	0,57	0,24	5,11	6,03	88,13	0,72	0,21	71,73	17,76	10,29
		Avg	**98,13**	**1,22**	**0,50**	**0,15**	**Err**	**Err**	**Err**	**Err**	**0,16**	**71,54**	**17,98**	**10,32**
		SD	**0,28**	**0,43**	**0,06**	**0,13**	**Err**	**Err**	**Err**	**Err**	**0,14**	**0,17**	**0,34**	**0,13**
	550°C	1	98,14	0,94	0,50	0,42	0,48	23,39	72,75	3,38	0,27	70,77	18,03	10,94
		2	98,60	0,67	0,69	0,05	0,44	65,54	23,95	10,07	0,14	70,41	18,03	11,43
		3	97,48	1,45	0,84	0,24	0,19	70,37	18,62	10,83	0,13	70,62	18,22	11,03
		Avg	**98,07**	**1,02**	**0,68**	**0,24**	**Err**	**Err**	**Err**	**Err**	**0,18**	**70,60**	**18,09**	**11,13**
		SD	**0,56**	**0,40**	**0,17**	**0,19**	**Err**	**Err**	**Err**	**Err**	**0,08**	**0,18**	**0,11**	**0,26**

Values in shaded cells were not used in calculation due to high deviation. Err indicates that the mean or SD is meaningless due to spotting error. In such cases, the interlayer, clearly although visible under SEM, was very thin therefore it was not possible for the probe to spot within it without covering the adjacent layers.

Table 24 (continued) Metal distribution in the palladium membrane heated at 450, 500 and 550°C.

Support			Pd layer (%)				Interlayer (%)				Stainless steel (%)			
			Pd	Fe	Cr	Ni	Pd	Fe	Cr	Ni	Pd	Fe	Cr	Ni
CrN, Ar-exposed	450°C	1	98,95	0,92	0,56	0,17	0,76	71,26	17,36	10,62	0,00	71,65	17,83	10,52
		2	98,16	1,04	0,74	0,05	8,97	62,43	19,28	9,32	0,00	71,23	18,23	10,54
		3	99,04	0,66	0,30	0,00	2,81	70,26	14,80	12,13	0,42	71,20	18,01	10,37
		Avg	**98,72**	**0,87**	**0,53**	**0,07**	**Err**	**Err**	**Err**	**Err**	**0,14**	**71,36**	**18,02**	**10,48**
		SD	**0,48**	**0,19**	**0,22**	**0,09**	**Err**	**Err**	**Err**	**Err**	**0,24**	**0,25**	**0,20**	**0,09**
	500°C	1	96,75	1,55	0,78	0,92	14,12	61,63	15,82	8,43	0,44	70,20	18,29	11,07
		2	96,19	2,13	0,93	0,75	2,68	69,86	17,03	10,44	0,38	70,97	18,05	10,60
		3	97,29	1,78	0,93	0,00	2,04	70,61	17,22	10,13	0,00	71,69	18,12	10,47
		Avg	**96,74**	**1,82**	**0,88**	**0,56**	**Err**	**Err**	**Err**	**Err**	**0,27**	**70,95**	**18,15**	**10,71**
		SD	**0,55**	**0,29**	**0,09**	**0,49**	**Err**	**Err**	**Err**	**Err**	**0,24**	**0,75**	**0,12**	**0,32**
	550°C	1	97,27	1,03	1,47	0,23	20,78	44,25	28,81	6,16	0,00	71,26	18,06	10,67
		2	94,02	2,34	3,59	0,05	20,22	47,65	24,82	7,30	0,46	70,74	18,12	10,68
		3	92,95	1,90	2,24	2,91	22,52	42,09	29,40	6,00	0,32	71,05	18,77	11,05
		Avg	**94,75**	**1,76**	**2,43**	**1,06**	**Err**	**Err**	**Err**	**Err**	**0,26**	**71,02**	**18,32**	**10,80**
		SD	**2,25**	**0,67**	**1,07**	**1,60**	**Err**	**Err**	**Err**	**Err**	**0,24**	**0,26**	**0,39**	**0,22**

Err indicates that the mean or SD is meaningless due to spotting error. In such cases, the interlayer, clearly although visible under SEM, was very thin therefore it was not possible for the probe to spot within it without covering the adjacent layers.

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