

Electronic supplemental information ESI – II

Results of EDAX measurements of the Ca-substituted MgFeO_4 samples ($\text{Mg}_{1-x}\text{Ca}_x\text{Fe}_2\text{O}_4$) and the estimations of elemental concentrations from the different regions of the samples examined.

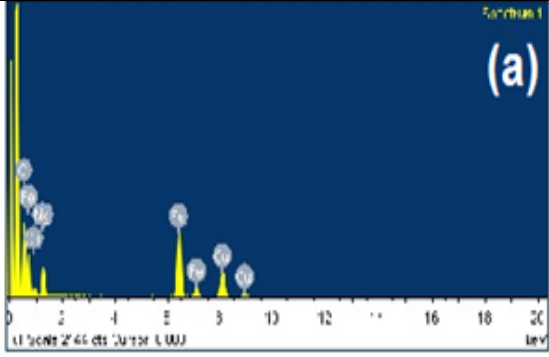
(Quantitation method : Cliff Lorimer thin ratio section; Processing option : All elements analysed (Normalised))

Title : Defects-focused analysis of calcium-substitution-induced structural transformation of magnesium ferrite nanocrystals

Authors : Ann Rose Abraham, B. Raneesh, D. Sanyal, Sabu Thomas, Nandakumar Kalarikkal and P.M.G. Nambissan

Journal : New Journal of Chemistry

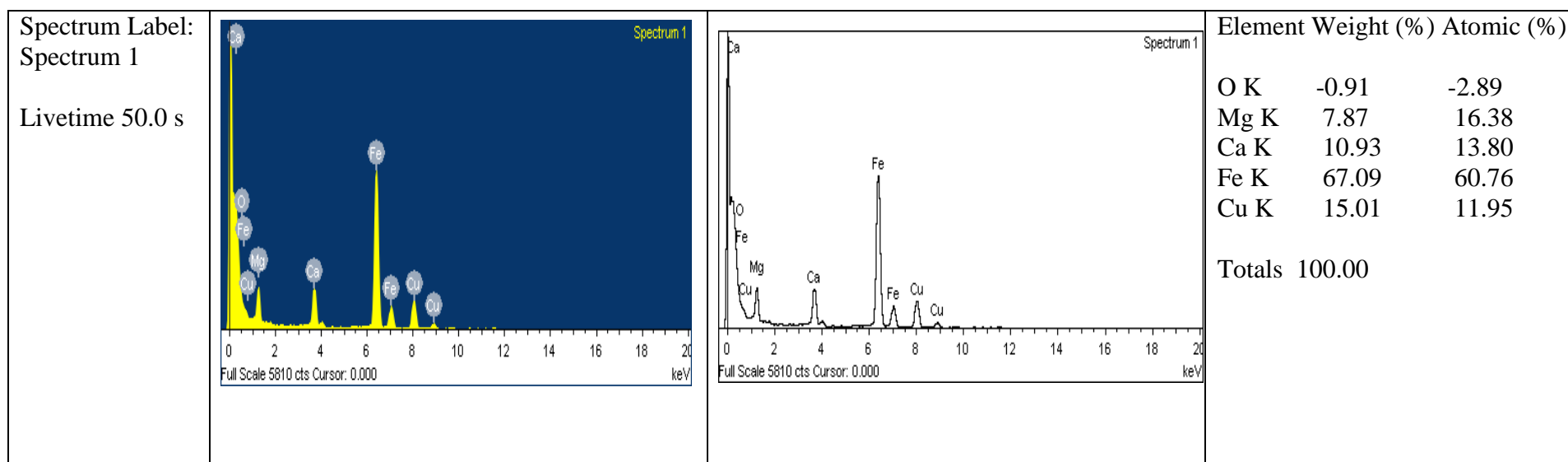
(i) MgFe_2O_4 , i.e., $x = 0.0$

Spectrum Label: Spectrum 1 Livetime 50.0 s		Element Weight (%) Atomic (%) O K 46.99 71.26 Mg K 10.11 10.10 Fe K 42.90 18.64 Totals 100.00
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Average elemental concentrations :

Sample	Element	Weight percentage (%)		Atomic percentage (%)	
		Calculated	Measured	Calculated	Measured
MgFe ₂ O ₄	Magnesium	12.15	10.11	14.28	10.10
	Calcium	0	0	0	0
	Iron	55.85	42.90	28.56	18.64
	Oxygen	32.00	46.99	57.14	71.26

(ii) Mg_{0.8}Ca_{0.2}Fe₂O₄, i.e., $x = 0.2$

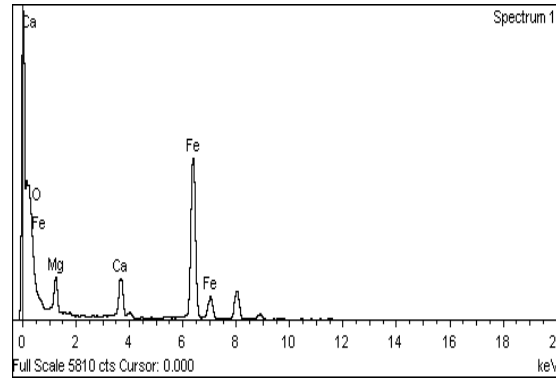
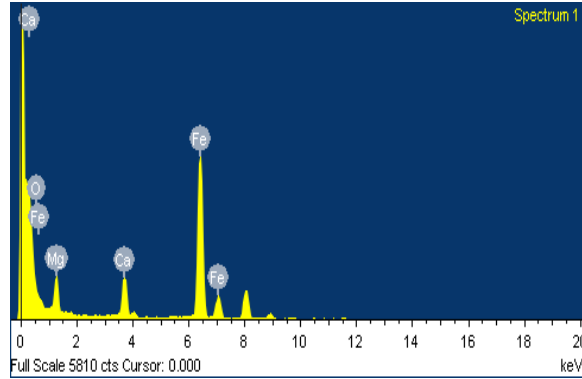


Spectrum processing :
 Peaks possibly omitted : 1.760, 9.663,
 11.512 keV

After removing the Cu contents

Spectrum Label:
 Spectrum 1

Livetime 50.0 s



Element Weight (%) Atomic (%)

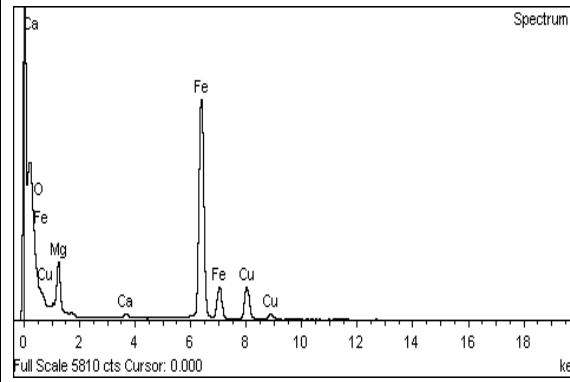
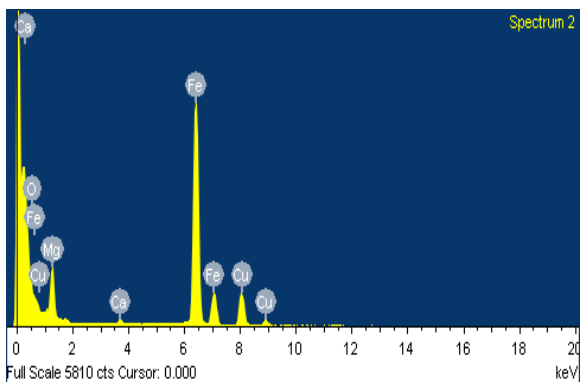
O K	-1.07	-3.27
Mg K	9.27	18.60
Ca K	12.87	15.67
Fe K	78.94	69.00

Totals 100.00

Spectrum processing :
 Peaks possibly omitted : 1.760, 8.028, 8.886,
 9.663, 11.512 keV

Spectrum Label:
 Spectrum 2

Livetime 50.0 s



Element Weight (%) Atomic (%)

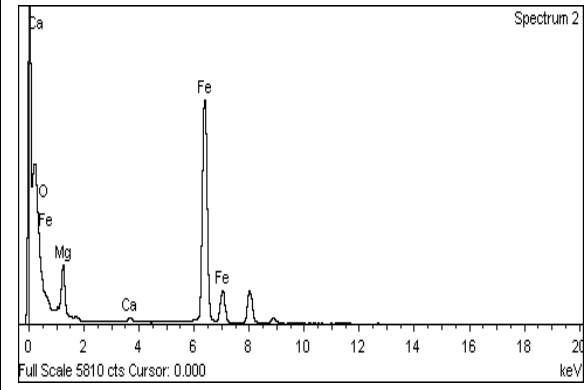
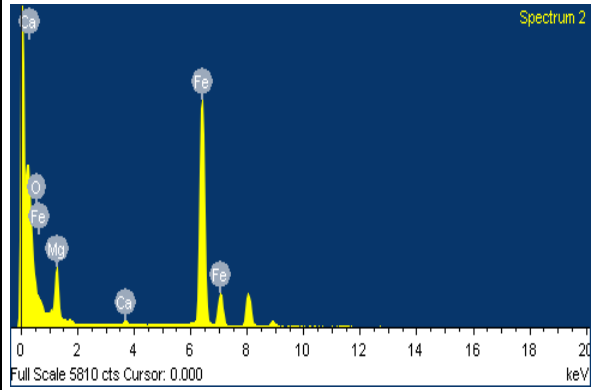
O K	-0.55	-1.77
Mg K	8.71	18.42
Ca K	0.82	1.06
Fe K	77.22	71.12
Cu K	13.80	11.17

Totals 100.00

Spectrum processing :
 Peaks possibly omitted : 1.745, 2.585, 5.415,
 9.666, 17.035, 18.035 keV

After removing the Cu contents

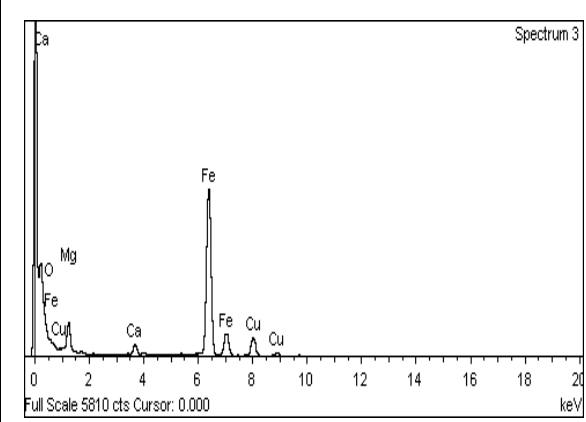
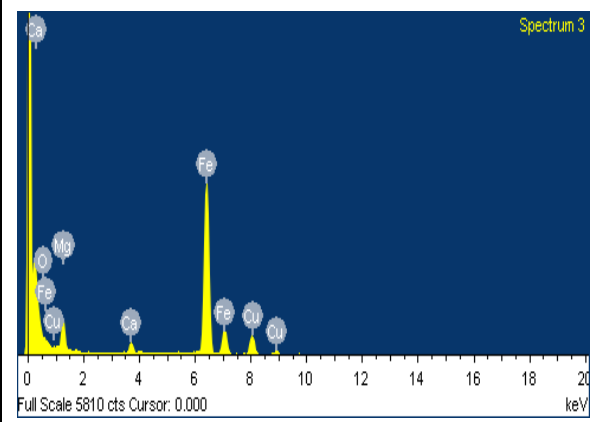
Spectrum Label:
 Spectrum 2
 Livetime 50.0 s



Element	Weight (%)	Atomic (%)
O K	-0.62	-1.94
Mg K	10.11	20.74
Ca K	0.96	1.19
Fe K	89.56	80.01
Totals	100.00	

Spectrum processing :
 Peaks possibly omitted : 1.745, 2.585, 5.415,
 8.027, 8.898, 9.666, 17.035, 18.035 keV

Spectrum Label:
 Spectrum 3
 Livetime 50.0 s



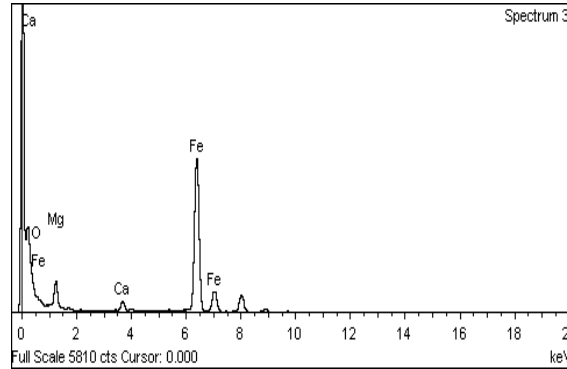
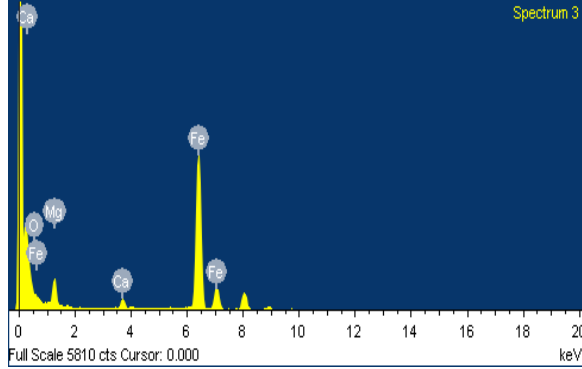
Element	Weight (%)	Atomic (%)
O K	-0.37	-1.18
Mg K	6.80	14.48
Ca K	3.10	4.00
Fe K	79.66	73.89
Cu K	10.81	8.81
Totals	100.00	

Spectrum processing :
 Peaks possibly omitted : 5.425, 9.688 keV

After removing the Cu contents

Spectrum Label:
 Spectrum 3

Livetime 50.0 s



Element Weight (%) Atomic (%)

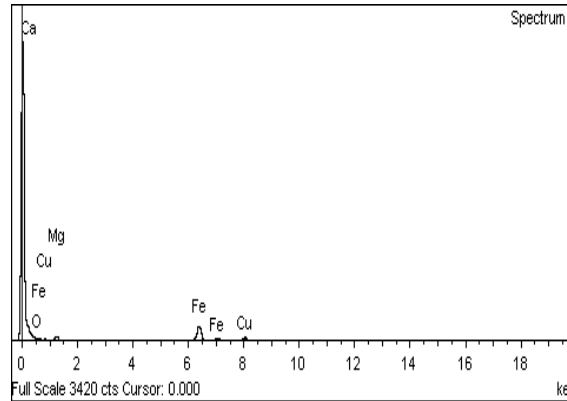
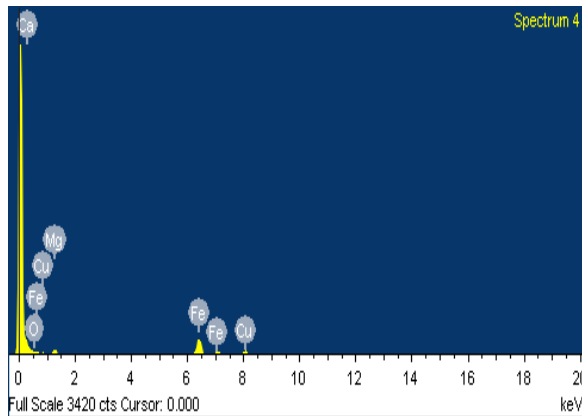
O K	-0.40	-1.26
Mg K	7.63	15.89
Ca K	3.47	4.39
Fe K	89.30	80.98

Totals 100.00

Spectrum processing :
 Peaks possibly omitted : 5.425, 8.028, 8.884,
 9.688 keV

Spectrum Label:
 Spectrum 4

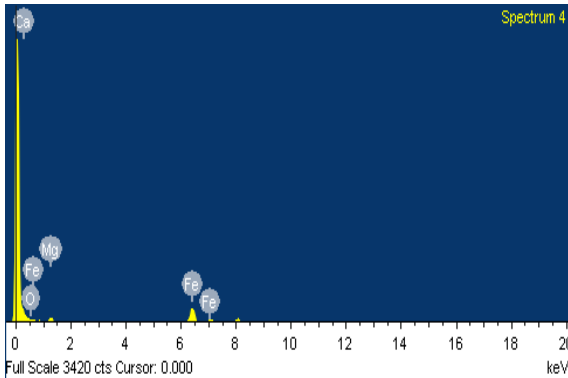
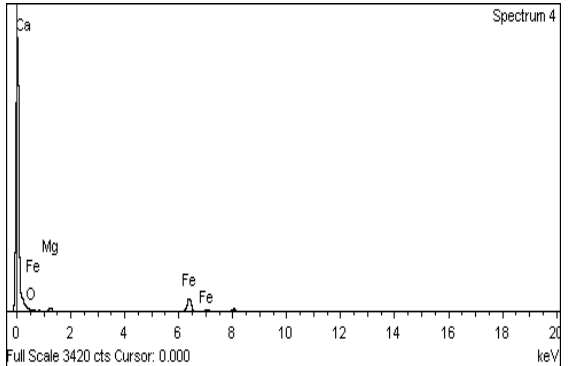
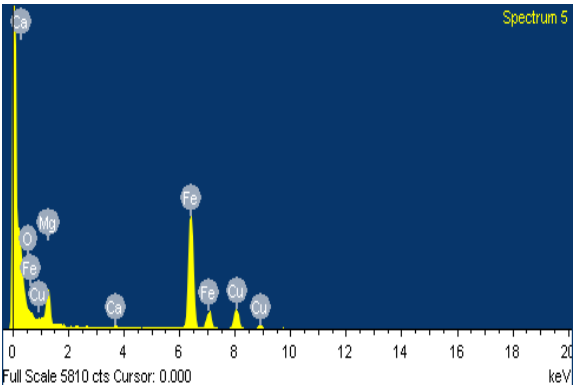
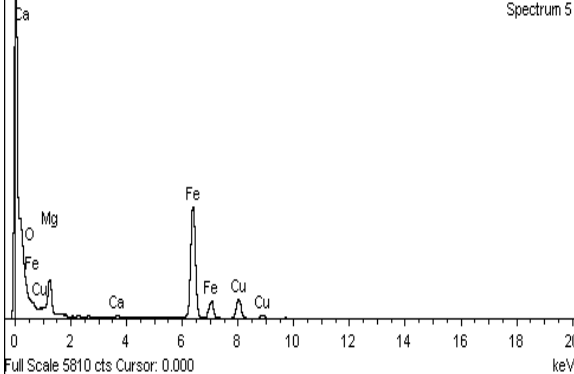
Livetime 22.5 s

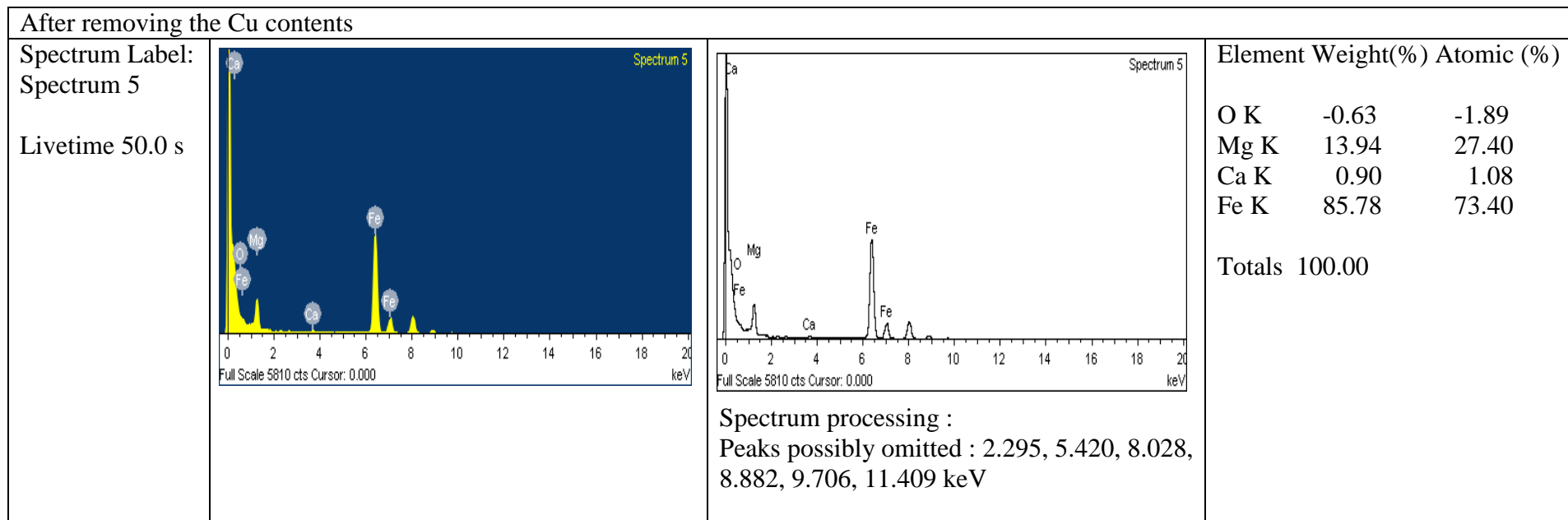


Element Weight (%) Atomic (%)

O K	1.05	3.23
Mg K	9.76	19.75
Ca K	0.64	0.79
Fe K	71.47	63.00
Cu K	17.08	13.23

Totals 100.00

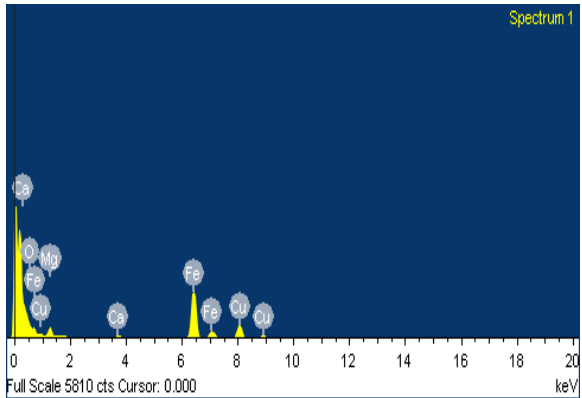
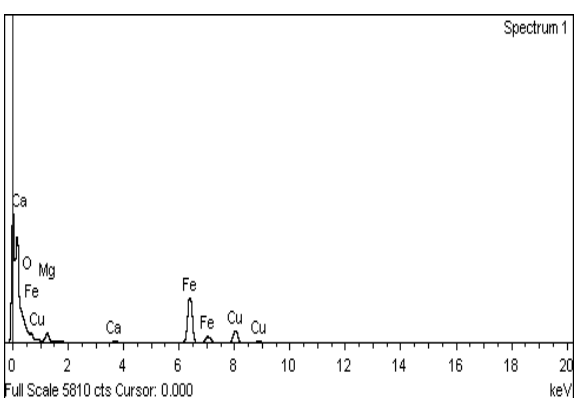
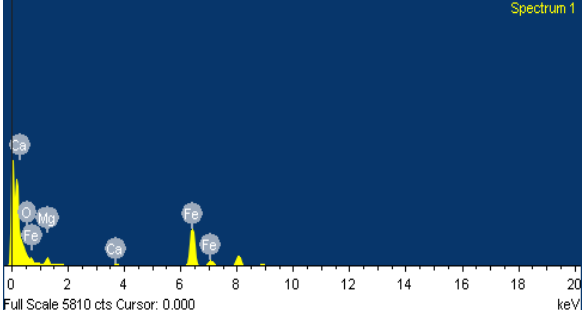
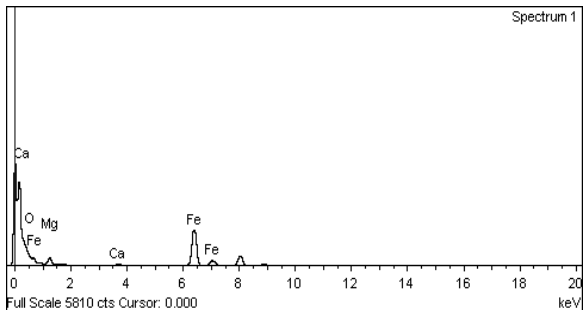
		Spectrum processing : No peaks omitted																			
After removing the Cu contents																					
<p>Spectrum Label: Spectrum 4</p> <p>Livetime 22.5 s</p>	 <p>Full Scale 3420 cts Cursor: 0.000 keV</p>	 <p>Full Scale 3420 cts Cursor: 0.000 keV</p> <p>Spectrum processing : Peak possibly omitted : 8.031 keV</p>	<p>Element Weight (%) Atomic (%)</p> <table border="1"> <tr> <td>O K</td> <td>1.24</td> <td>3.65</td> </tr> <tr> <td>Mg K</td> <td>11.75</td> <td>22.76</td> </tr> <tr> <td>Ca K</td> <td>0.78</td> <td>0.91</td> </tr> <tr> <td>Fe K</td> <td>86.23</td> <td>72.68</td> </tr> <tr> <td>Totals</td> <td>100.00</td> <td></td> </tr> </table>	O K	1.24	3.65	Mg K	11.75	22.76	Ca K	0.78	0.91	Fe K	86.23	72.68	Totals	100.00				
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Ca K	0.78	0.91																			
Fe K	86.23	72.68																			
Totals	100.00																				
<p>Spectrum Label: Spectrum 5</p> <p>Livetime 50.0 s</p>	 <p>Full Scale 5810 cts Cursor: 0.000 keV</p>	 <p>Full Scale 5810 cts Cursor: 0.000 keV</p> <p>Spectrum processing : Peaks possibly omitted : 2.295, 5.420, 9.706, 11.409 keV</p>	<p>Element Weight (%) Atomic (%)</p> <table border="1"> <tr> <td>O K</td> <td>-0.55</td> <td>-1.71</td> </tr> <tr> <td>Mg K</td> <td>11.76</td> <td>24.06</td> </tr> <tr> <td>Ca K</td> <td>0.76</td> <td>0.95</td> </tr> <tr> <td>Fe K</td> <td>72.43</td> <td>64.50</td> </tr> <tr> <td>Cu K</td> <td>15.59</td> <td>12.20</td> </tr> <tr> <td>Totals</td> <td>100.00</td> <td></td> </tr> </table>	O K	-0.55	-1.71	Mg K	11.76	24.06	Ca K	0.76	0.95	Fe K	72.43	64.50	Cu K	15.59	12.20	Totals	100.00	
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Totals	100.00																				

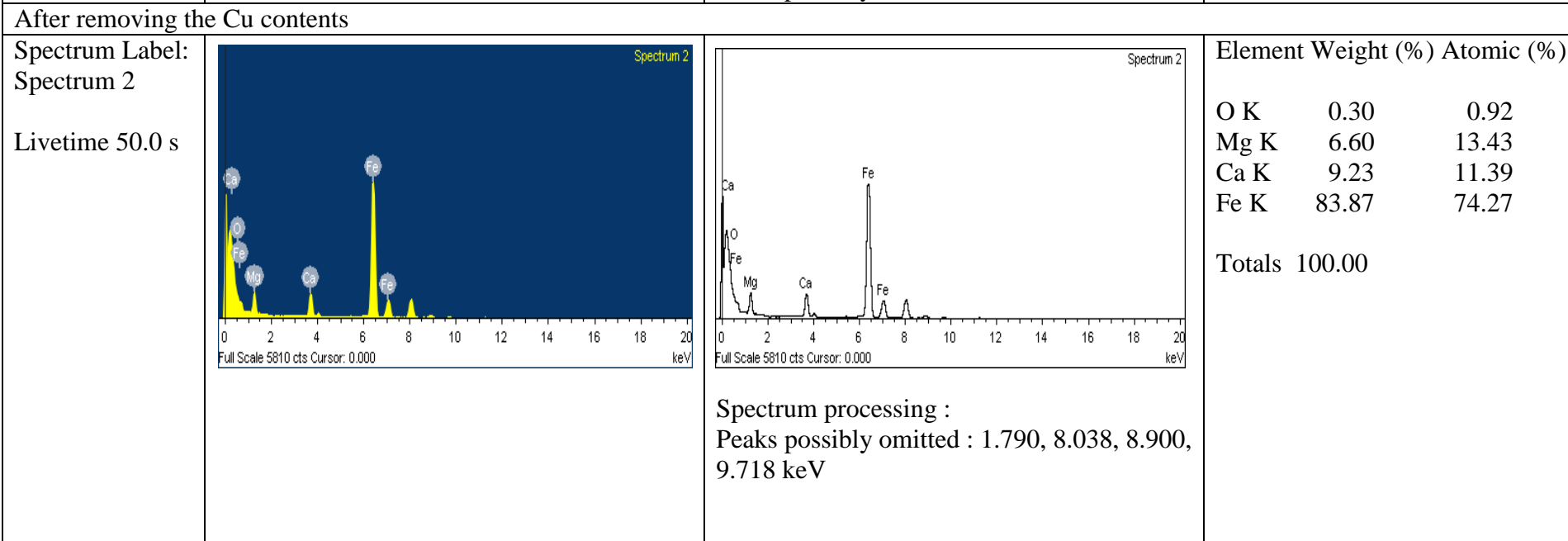
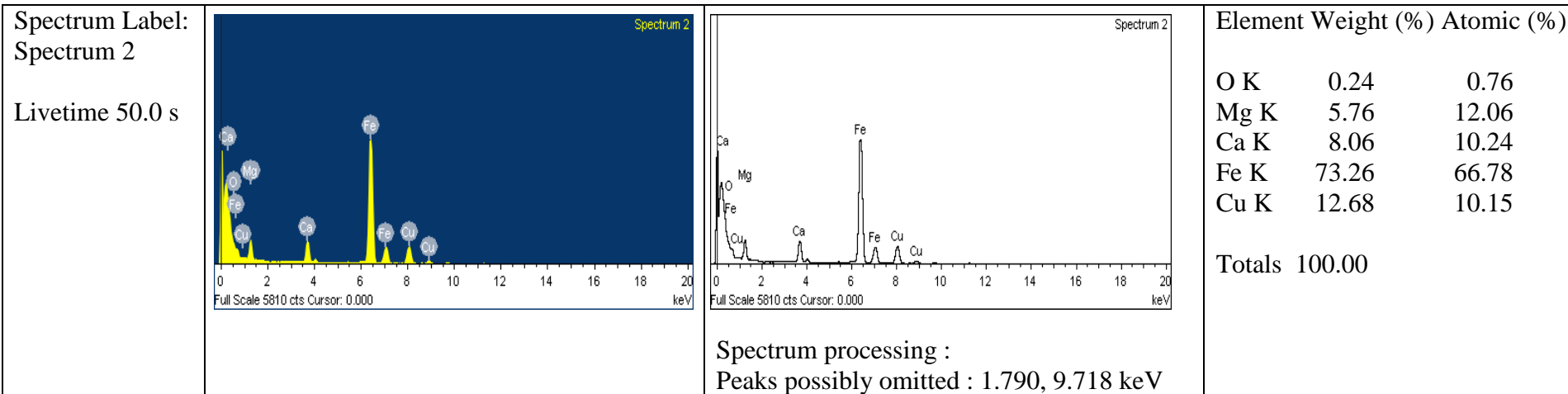


Average elemental concentrations :

Sample	Element	Weight percentage (%)		Atomic percentage (%)	
		Calculated	Measured	Calculated	Measured
$Mg_{0.8}Ca_{0.2}Fe_2O_4$	Magnesium	9.57	10.54	11.43	21.08
	Calcium	3.95	3.80	2.86	4.468
	Iron	54.98	85.96	28.57	75.21
	Oxygen	31.50	-0.30	57.14	0.942

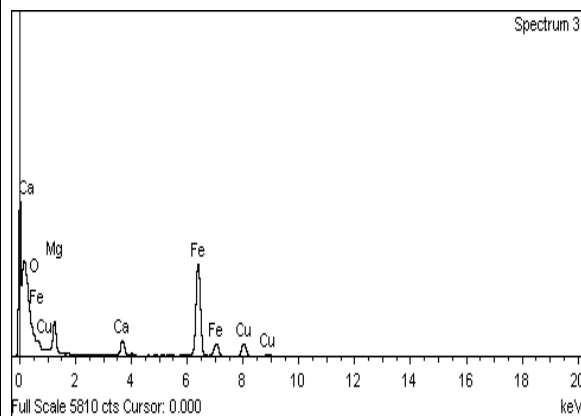
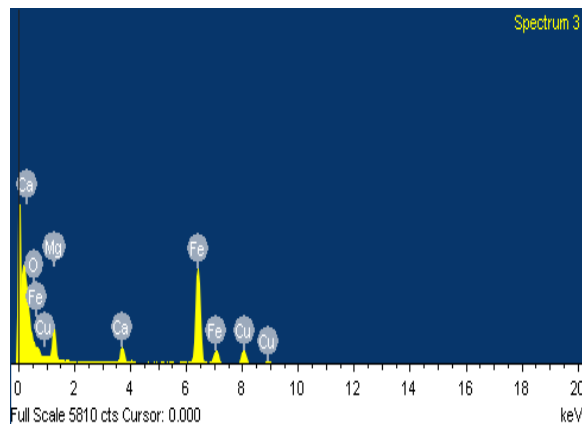
(iii) $\text{Mg}_{0.6}\text{Ca}_{0.4}\text{Fe}_2\text{O}_4$, i.e., $x = 0.4$

<p>Spectrum Label: Spectrum 1</p> <p>Livetime 50.0 s</p>	 <p>Full Scale 5810 cts Cursor: 0.000 keV</p>	 <p>Full Scale 5810 cts Cursor: 0.000 keV</p> <p>Spectrum processing : Peak possibly omitted : 9.701 keV</p>	<table border="1"> <thead> <tr> <th>Element</th> <th>Weight (%)</th> <th>Atomic (%)</th> </tr> </thead> <tbody> <tr> <td>O K</td> <td>-0.66</td> <td>-2.21</td> </tr> <tr> <td>Mg K</td> <td>5.62</td> <td>12.46</td> </tr> <tr> <td>Ca K</td> <td>1.90</td> <td>2.56</td> </tr> <tr> <td>Fe K</td> <td>69.59</td> <td>67.20</td> </tr> <tr> <td>Cu K</td> <td>23.54</td> <td>19.98</td> </tr> <tr> <td>Totals</td> <td>100.00</td> <td></td> </tr> </tbody> </table>	Element	Weight (%)	Atomic (%)	O K	-0.66	-2.21	Mg K	5.62	12.46	Ca K	1.90	2.56	Fe K	69.59	67.20	Cu K	23.54	19.98	Totals	100.00	
Element	Weight (%)	Atomic (%)																						
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Totals	100.00																							
<p>After removing the Cu contents</p>																								
<p>Spectrum Label: Spectrum 1</p> <p>Livetime 50.0 s</p>	 <p>Full Scale 5810 cts Cursor: 0.000 keV</p>	 <p>Full Scale 5810 cts Cursor: 0.000 keV</p> <p>Spectrum processing : Peaks possibly omitted : 8.040, 8.903, 9.701 keV</p>	<table border="1"> <thead> <tr> <th>Element</th> <th>Weight (%)</th> <th>Atomic (%)</th> </tr> </thead> <tbody> <tr> <td>O K</td> <td>-0.74</td> <td>-2.37</td> </tr> <tr> <td>Mg K</td> <td>7.38</td> <td>15.59</td> </tr> <tr> <td>Ca K</td> <td>2.49</td> <td>3.19</td> </tr> <tr> <td>Fe K</td> <td>90.87</td> <td>83.59</td> </tr> <tr> <td>Totals</td> <td>100.00</td> <td></td> </tr> </tbody> </table>	Element	Weight (%)	Atomic (%)	O K	-0.74	-2.37	Mg K	7.38	15.59	Ca K	2.49	3.19	Fe K	90.87	83.59	Totals	100.00				
Element	Weight (%)	Atomic (%)																						
O K	-0.74	-2.37																						
Mg K	7.38	15.59																						
Ca K	2.49	3.19																						
Fe K	90.87	83.59																						
Totals	100.00																							



Spectrum Label:
Spectrum 3

Livetime 50.0 s



Element Weight (%) Atomic (%)

O K	1.39	4.05
Mg K	11.48	22.05
Ca K	6.90	8.04
Fe K	68.09	56.94
Cu K	12.13	8.92

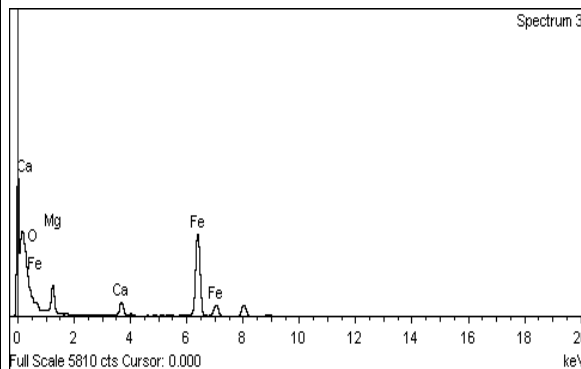
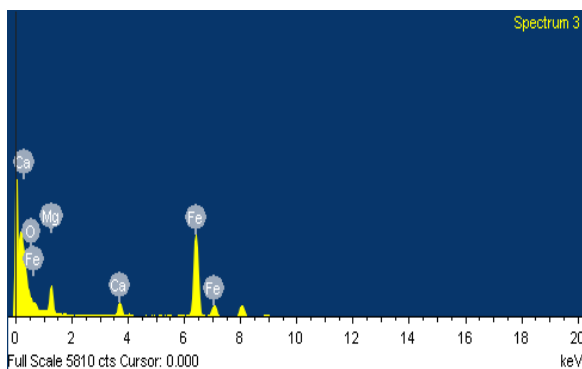
Totals 100.00

Spectrum processing :
Peaks possibly omitted : 1.744, 9.706 keV

After removing the Cu contents

Spectrum Label:
Spectrum 3

Livetime 50.0 s



Element Weight (%) Atomic (%)

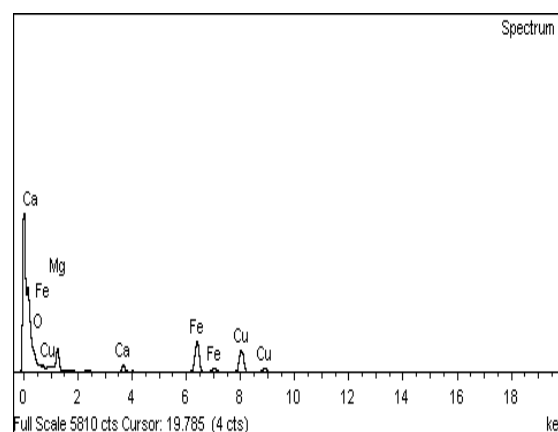
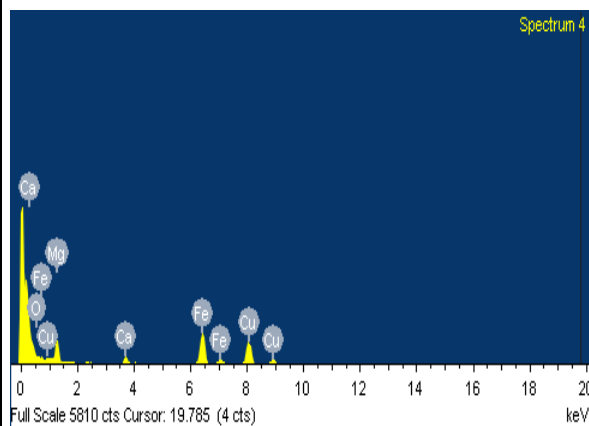
O K	1.59	4.46
Mg K	13.07	24.21
Ca K	7.85	8.83
Fe K	77.49	62.50

Totals 100.00

Spectrum processing :
Peaks possibly omitted : 1.744, 8.039, 8.907,
9.706 keV

Spectrum Label:
Spectrum 4

Livetime 50.0 s



Element Weight (%) Atomic (%)

O K	0.90	2.67
Mg K	14.04	27.31
Ca K	5.71	6.74
Fe K	41.32	34.98
Cu K	38.03	28.30

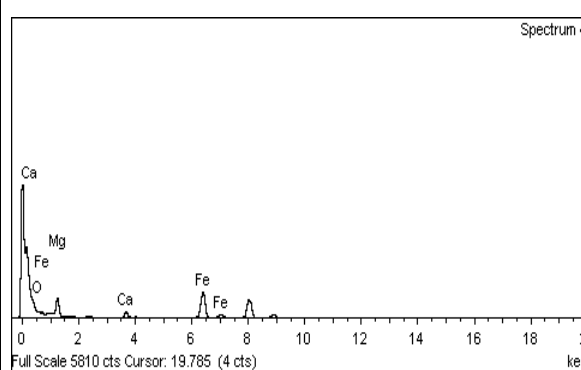
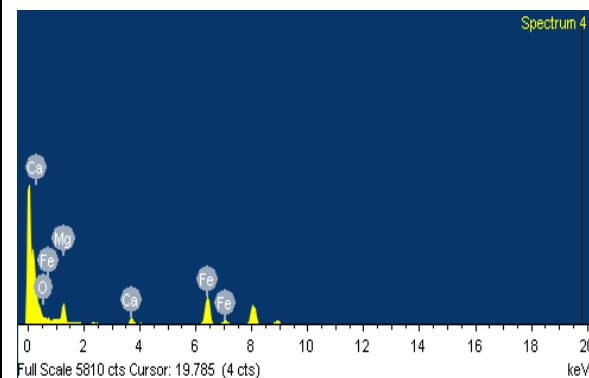
Totals 100.00

Spectrum processing :
Peaks possibly omitted : 9.710, 10.546,
12.625 keV

After removing the Cu contents

Spectrum Label:
Spectrum 4

Livetime 50.0 s

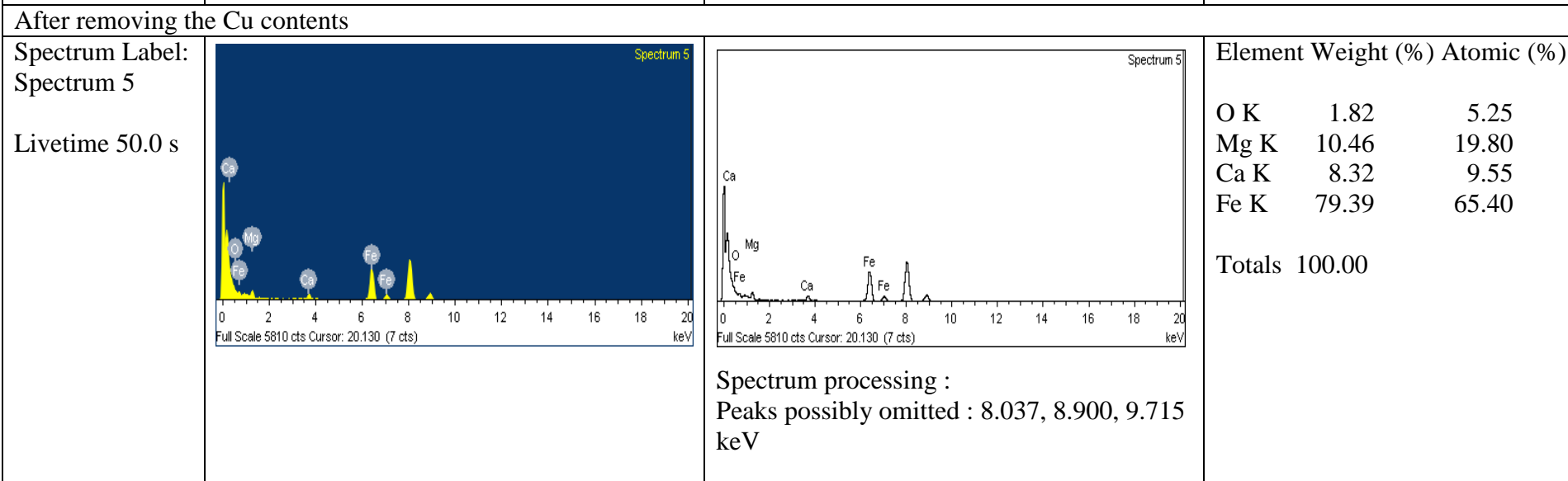
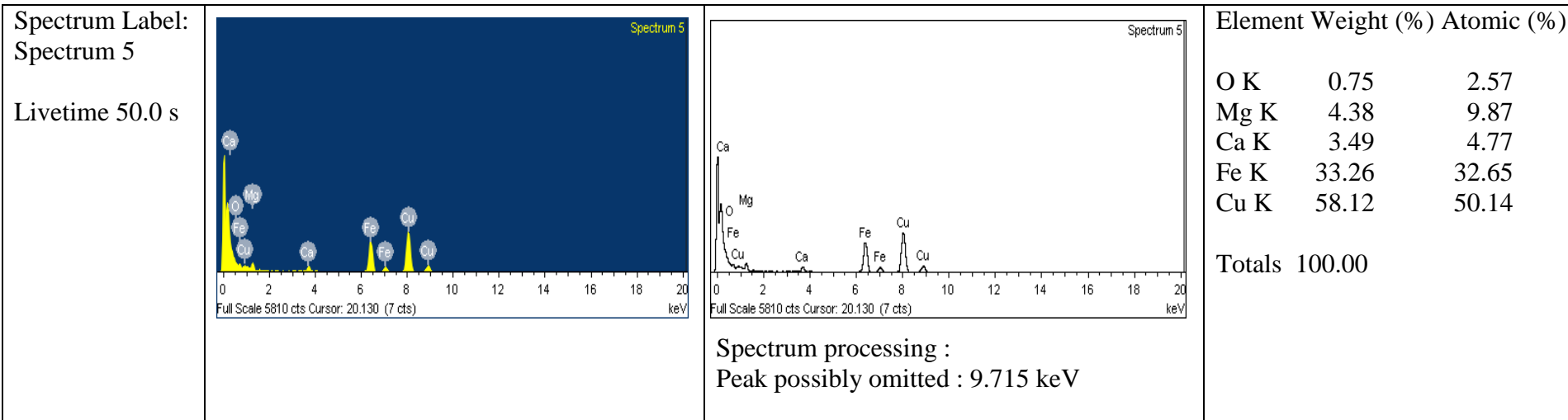


Element Weight (%) Atomic (%)

O K	1.51	3.85
Mg K	22.67	38.07
Ca K	9.21	9.38
Fe K	66.62	48.70

Totals 100.00

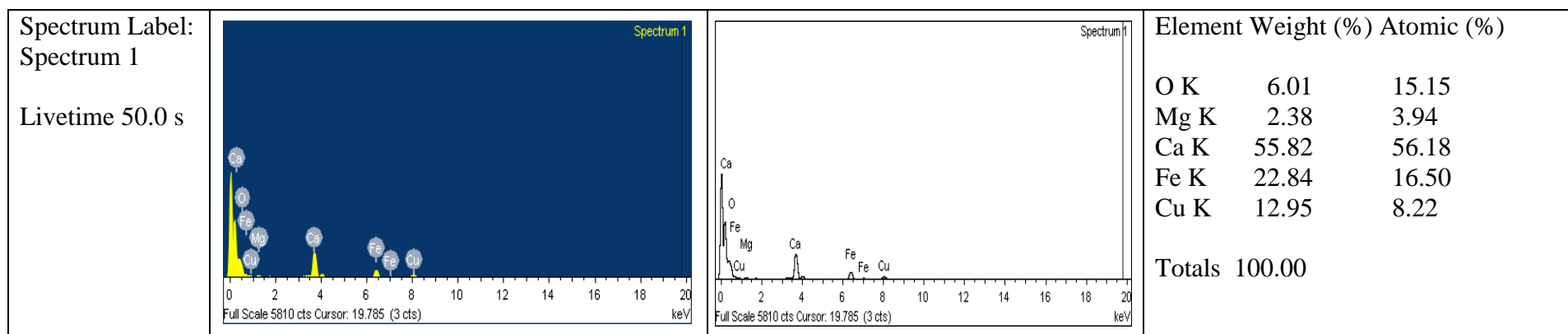
Spectrum processing :
Peaks possibly omitted : 8.038, 8.901, 9.710,
10.546, 12.625 keV



Average elemental concentrations :

Sample	Element	Weight percentage (%)		Atomic percentage (%)	
		Calculated	Measured	Calculated	Measured
$Mg_{0.6}Ca_{0.4}Fe_2O_4$	Magnesium	7.07	12.04	8.57	22.20
	Calcium	7.77	7.42	5.71	8.47
	Iron	54.14	79.65	28.57	66.95
	Oxygen	31.02	0.89	57.15	2.42

(iv) $Mg_{0.4}Ca_{0.6}Fe_2O_4$, i.e., $x = 0.6$

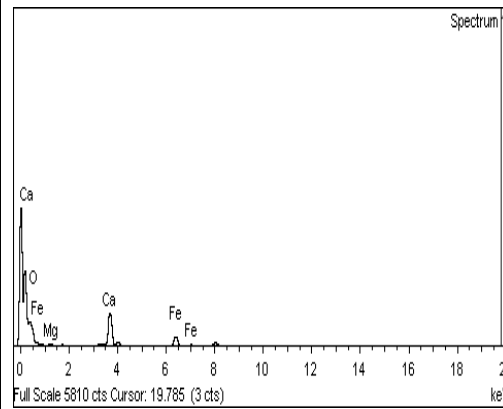
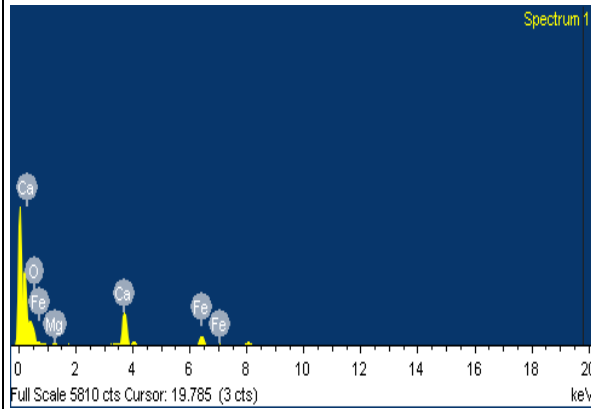


Spectrum processing :
No peaks omitted

After removing the Cu contents

Spectrum Label:
Spectrum 1

Livetime 50.0 s



Element Weight (%) Atomic (%)

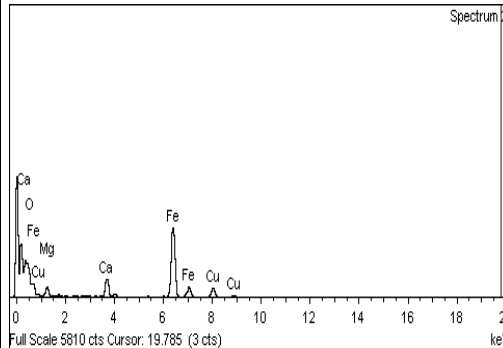
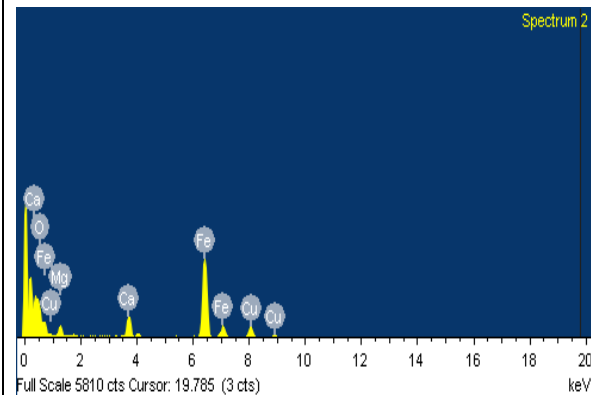
O K	6.96	16.63
Mg K	2.75	4.32
Ca K	64.07	61.11
Fe K	26.22	17.95

Totals 100.00

Spectrum processing :
Peaks possibly omitted : 8.043, 8.902 keV

Spectrum Label:
Spectrum 2

Livetime 50.0 s



Element Weight (%) Atomic (%)

O K	3.48	10.28
Mg K	4.61	8.95
Ca K	12.55	14.79
Fe K	68.52	57.93
Cu K	10.84	8.05

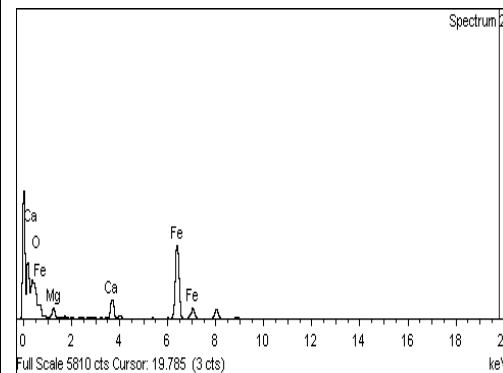
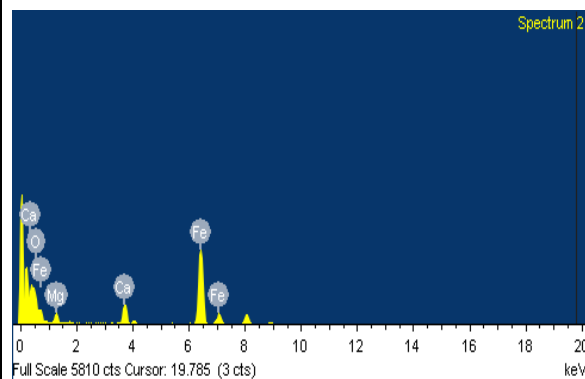
Totals 100.00

Spectrum processing :
Peak possibly omitted : 1.740 keV

After removing the Cu contents

Spectrum Label:
Spectrum 2

Livetime 50.0 s



Spectrum processing :
Peaks possibly omitted : 1.740, 8.041,
8.904 keV

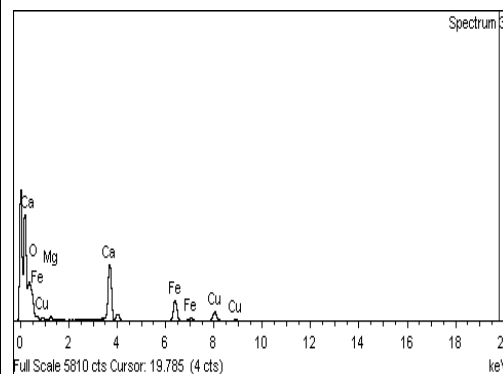
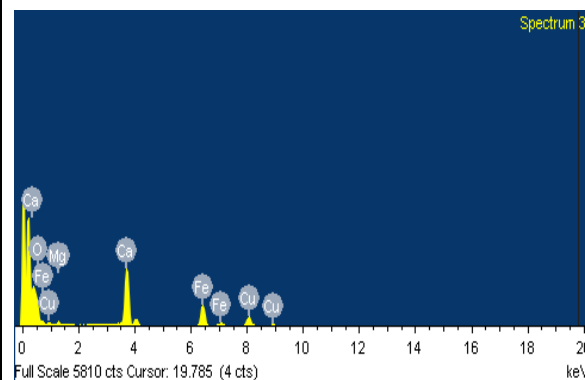
Element Weight (%) Atomic (%)

O K	3.92	11.21
Mg K	5.17	9.73
Ca K	14.08	16.08
Fe K	76.84	62.98

Totals 100.00

Spectrum Label:
Spectrum 3

Livetime 50.0 s



Spectrum processing :
Peaks possibly omitted : 1.771, 9.700
keV

Element Weight (%) Atomic (%)

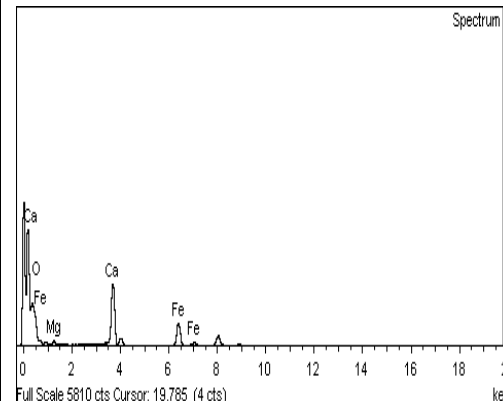
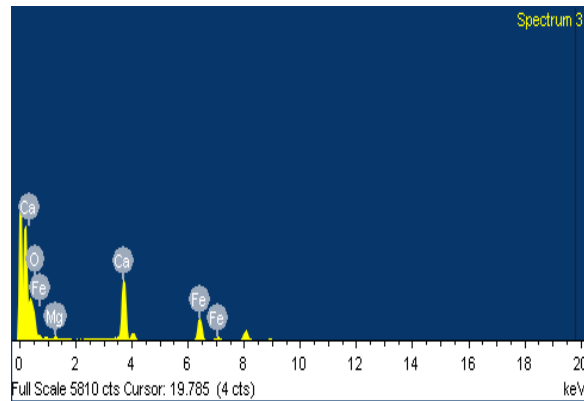
O K	4.84	12.71
Mg K	2.47	4.27
Ca K	49.71	52.12
Fe K	27.09	20.38
Cu K	15.89	10.51

Totals 100.00

After removing the Cu contents

Spectrum Label:
Spectrum 3

Livetime 50.0 s



Spectrum processing :
Peaks possibly omitted : 1.771, 8.041,
8.912, 9.700 keV

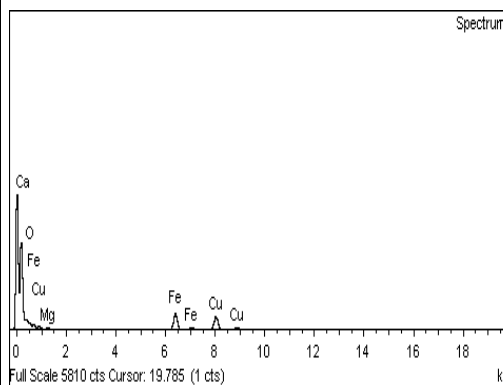
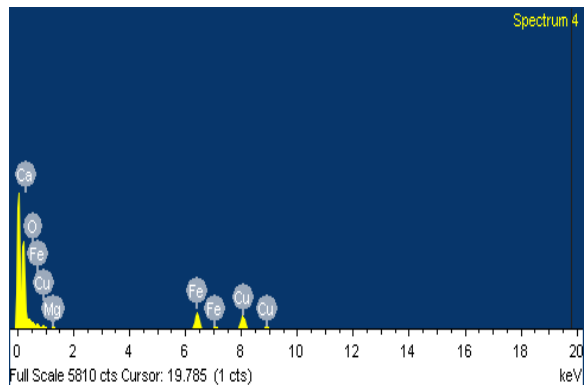
Element Weight (%) Atomic (%)

O K	5.83	14.37
Mg K	2.96	4.80
Ca K	59.04	58.11
Fe K	32.17	22.72

Totals 100.00

Spectrum Label:
Spectrum 4

Livetime 50.0 s



Spectrum processing :
No peaks omitted

Element Weight (%) Atomic (%)

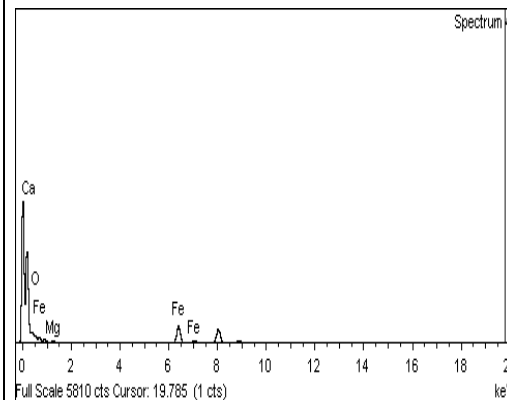
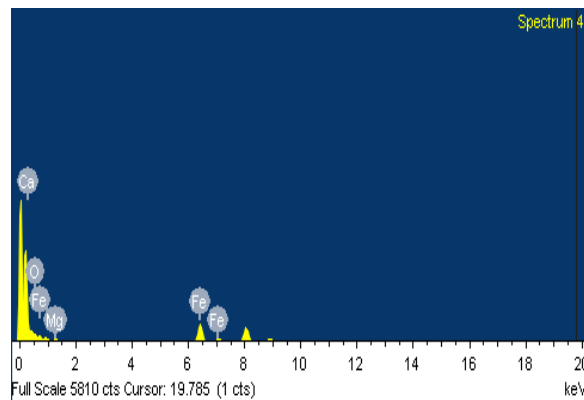
O K	5.71	17.73
Mg K	2.66	5.43
Ca K	0.65	0.81
Fe K	44.88	39.95
Cu K	46.10	36.07

Totals 100.00

After removing the Cu contents

Spectrum Label:
Spectrum 4

Livetime 50.0 s



Spectrum processing :
Peaks possibly omitted : 8.042, 8.909 keV

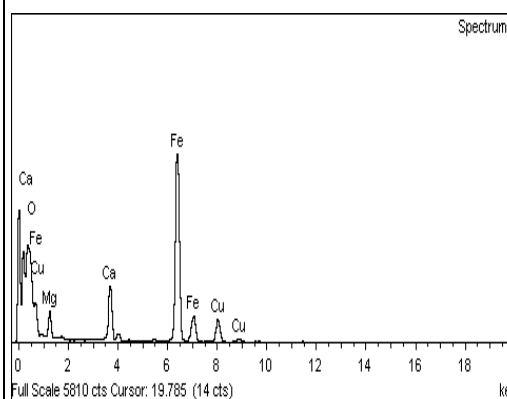
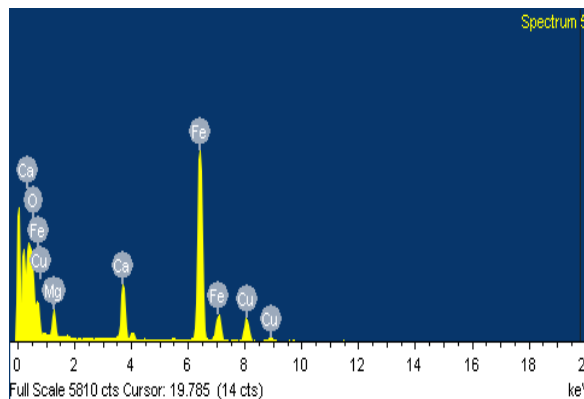
Element Weight (%) Atomic (%)

O K	10.78	28.12
Mg K	4.98	8.56
Ca K	1.21	1.26
Fe K	83.03	62.06

Totals 100.00

Spectrum Label:
Spectrum 5

Livetime 50.0 s

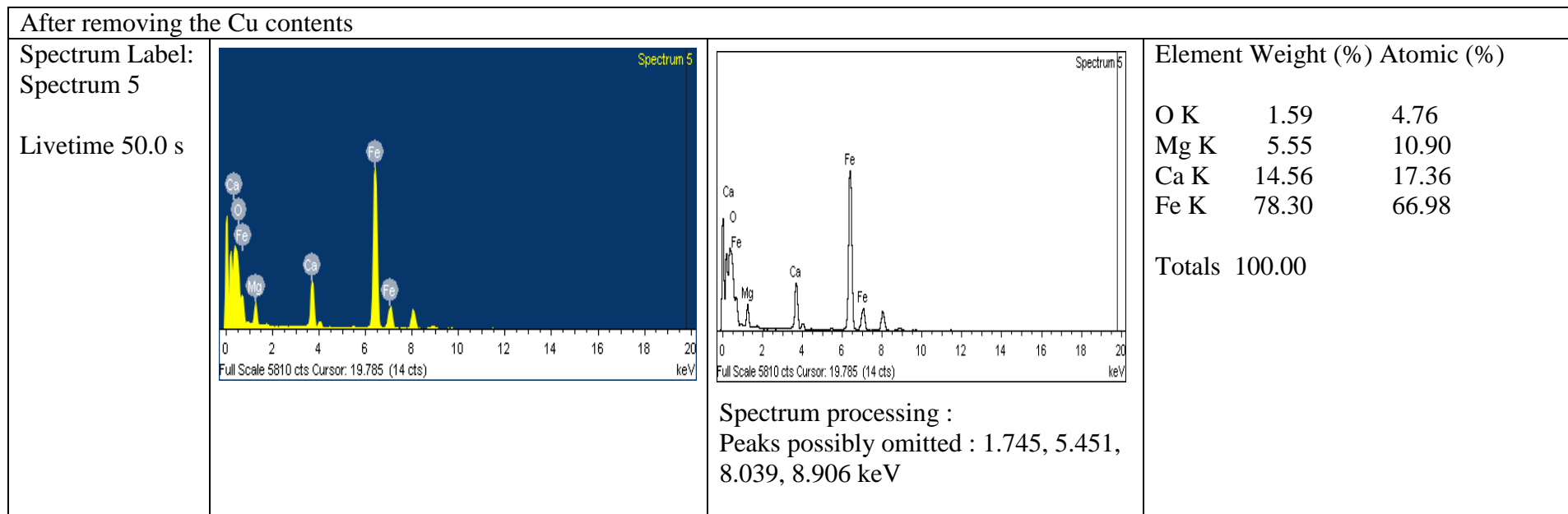


Spectrum processing :
Peaks possibly omitted : 1.745, 5.451 keV

Element Weight (%) Atomic (%)

O K	1.41	4.32
Mg K	4.99	10.06
Ca K	13.12	16.04
Fe K	70.54	61.91
Cu K	9.94	7.66

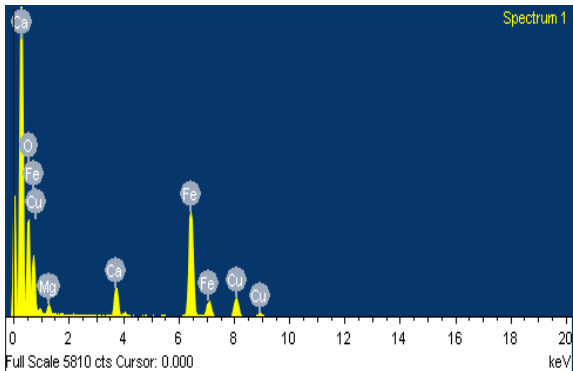
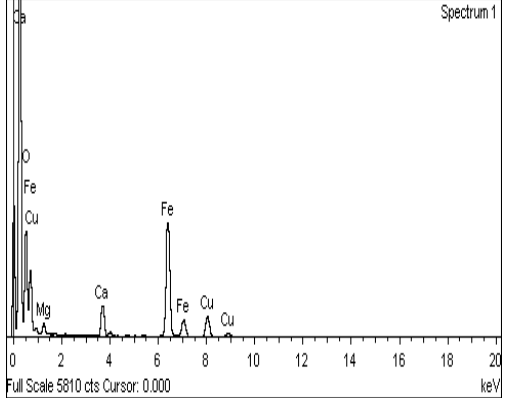
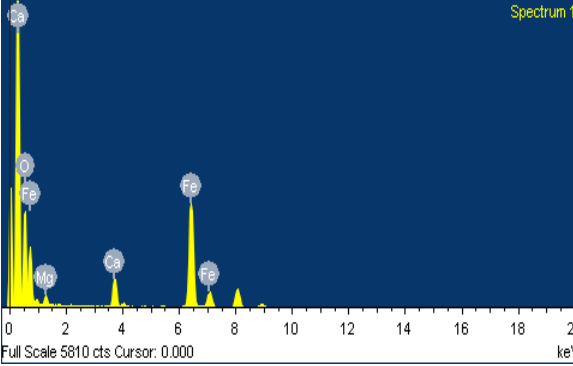
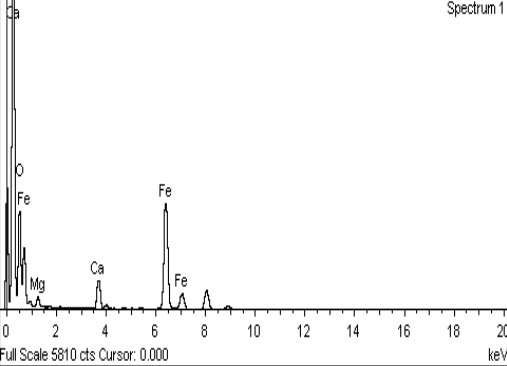
Totals 100.00

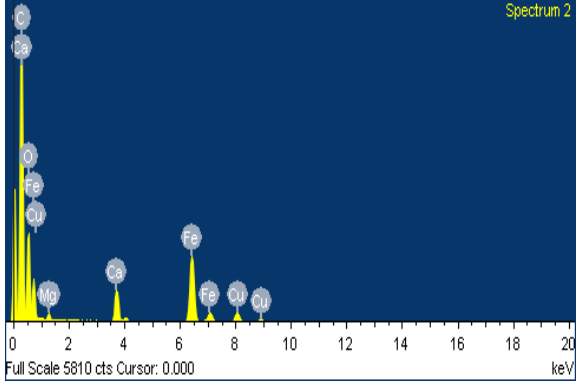
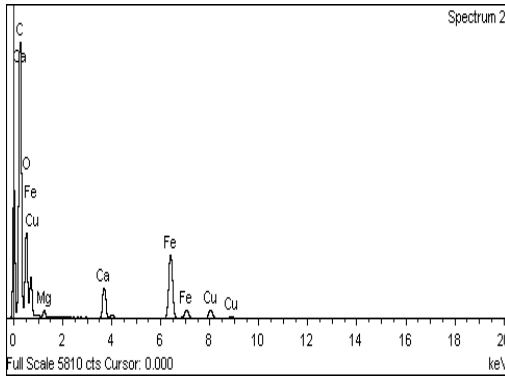
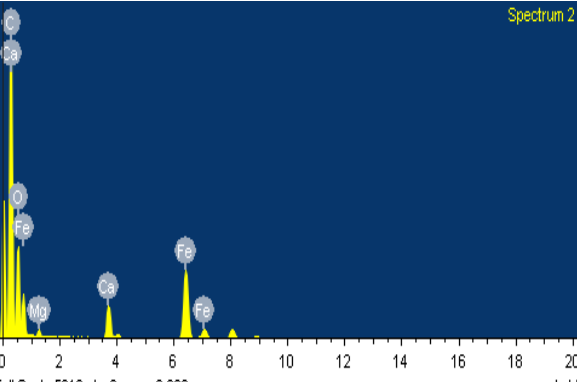
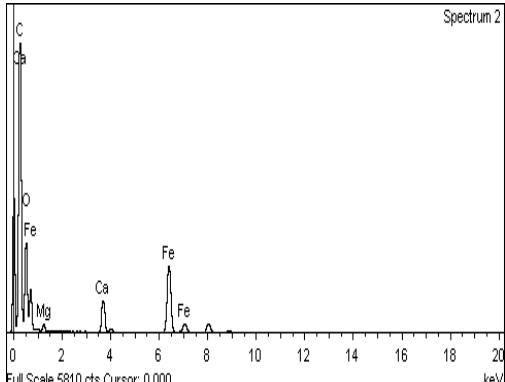


Average elemental concentrations :

Sample	Element	Weight percentage (%)		Atomic percentage (%)	
		Calculated	Measured	Calculated	Measured
$Mg_{0.4}Ca_{0.6}Fe_2O_4$	Magnesium	4.73	4.28	5.82	10.12
	Calcium	11.48	30.59	8.55	30.59
	Iron	53.34	59.31	28.54	46.54
	Oxygen	30.56	5.82	57.09	15.02

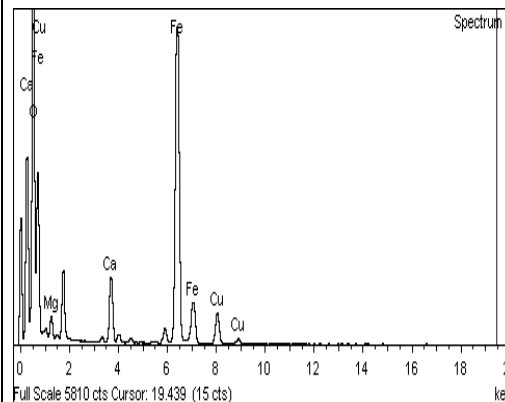
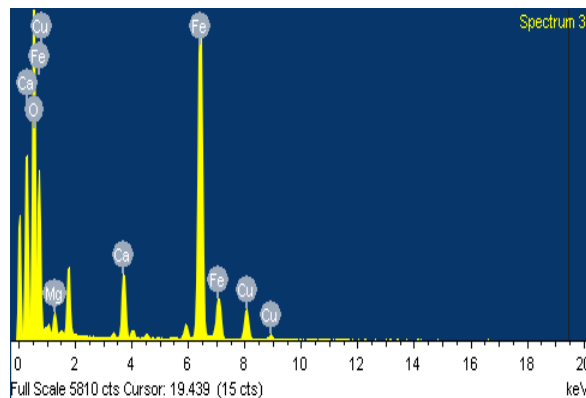
(v) $\text{Mg}_{0.2}\text{Ca}_{0.8}\text{Fe}_2\text{O}_4$, i.e., $x = 0.8$

<p>Spectrum Label: Spectrum 1</p> <p>Livetime 50.0 s</p>		 <p>Spectrum processing : Peaks possibly omitted : 1.750, 9.720 keV</p>	<table border="1"> <thead> <tr> <th colspan="3">Element Weight (%) Atomic (%)</th> </tr> </thead> <tbody> <tr> <td>O K</td> <td>33.11</td> <td>61.54</td> </tr> <tr> <td>Mg K</td> <td>2.52</td> <td>3.08</td> </tr> <tr> <td>Ca K</td> <td>8.46</td> <td>6.27</td> </tr> <tr> <td>Fe K</td> <td>45.63</td> <td>24.29</td> </tr> <tr> <td>Cu K</td> <td>10.29</td> <td>4.81</td> </tr> <tr> <td>Totals</td> <td>100.00</td> <td></td> </tr> </tbody> </table>	Element Weight (%) Atomic (%)			O K	33.11	61.54	Mg K	2.52	3.08	Ca K	8.46	6.27	Fe K	45.63	24.29	Cu K	10.29	4.81	Totals	100.00	
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Mg K	2.52	3.08																						
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Totals	100.00																							
<p>After removing the Cu contents</p>																								
<p>Spectrum Label: Spectrum 1</p> <p>Livetime 50.0 s</p>			<table border="1"> <thead> <tr> <th colspan="3">Element Weight (%) Atomic (%)</th> </tr> </thead> <tbody> <tr> <td>O K</td> <td>36.93</td> <td>64.67</td> </tr> <tr> <td>Mg K</td> <td>2.82</td> <td>3.25</td> </tr> <tr> <td>Ca K</td> <td>9.42</td> <td>6.59</td> </tr> <tr> <td>Fe K</td> <td>50.83</td> <td>25.50</td> </tr> <tr> <td>Totals</td> <td>100.00</td> <td></td> </tr> </tbody> </table>	Element Weight (%) Atomic (%)			O K	36.93	64.67	Mg K	2.82	3.25	Ca K	9.42	6.59	Fe K	50.83	25.50	Totals	100.00				
Element Weight (%) Atomic (%)																								
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Mg K	2.82	3.25																						
Ca K	9.42	6.59																						
Fe K	50.83	25.50																						
Totals	100.00																							

<p>Spectrum Label: Spectrum 2</p> <p>Livetime 50.0 s</p>		<p>Spectrum processing : Peaks possibly omitted : 1.750, 8.047, 8.907, 9.720 keV</p>  <p>Spectrum processing : Peak possibly omitted : 9.700 keV</p>	<p>Element Weight (%) Atomic(%)</p> <table border="1"> <tbody> <tr> <td>C K</td> <td>59.67</td> <td>76.67</td> </tr> <tr> <td>O K</td> <td>16.63</td> <td>16.05</td> </tr> <tr> <td>Mg K</td> <td>0.79</td> <td>0.50</td> </tr> <tr> <td>Ca K</td> <td>4.96</td> <td>1.91</td> </tr> <tr> <td>Fe K</td> <td>15.29</td> <td>4.23</td> </tr> <tr> <td>Cu K</td> <td>2.65</td> <td>0.64</td> </tr> <tr> <td>Totals</td> <td>100.00</td> <td></td> </tr> </tbody> </table>	C K	59.67	76.67	O K	16.63	16.05	Mg K	0.79	0.50	Ca K	4.96	1.91	Fe K	15.29	4.23	Cu K	2.65	0.64	Totals	100.00	
C K	59.67	76.67																						
O K	16.63	16.05																						
Mg K	0.79	0.50																						
Ca K	4.96	1.91																						
Fe K	15.29	4.23																						
Cu K	2.65	0.64																						
Totals	100.00																							
<p>After removing the Cu contents</p>																								
<p>Spectrum Label: Spectrum 2</p> <p>Livetime 50.0 s</p>		 <p>Spectrum processing : Peaks possibly omitted : 8.046, 8.902, 9.700 keV</p>	<p>Element Weight (%) Atomic (%)</p> <table border="1"> <tbody> <tr> <td>C K</td> <td>61.29</td> <td>77.16</td> </tr> <tr> <td>O K</td> <td>17.09</td> <td>16.16</td> </tr> <tr> <td>Mg K</td> <td>0.81</td> <td>0.51</td> </tr> <tr> <td>Ca K</td> <td>5.10</td> <td>1.92</td> </tr> <tr> <td>Fe K</td> <td>15.71</td> <td>4.25</td> </tr> <tr> <td>Totals</td> <td>100.00</td> <td></td> </tr> </tbody> </table>	C K	61.29	77.16	O K	17.09	16.16	Mg K	0.81	0.51	Ca K	5.10	1.92	Fe K	15.71	4.25	Totals	100.00				
C K	61.29	77.16																						
O K	17.09	16.16																						
Mg K	0.81	0.51																						
Ca K	5.10	1.92																						
Fe K	15.71	4.25																						
Totals	100.00																							

Spectrum Label:
Spectrum 3

Livetime 50.0 s



Element Weight (%) Atomic (%)

Element	Weight (%)	Atomic (%)
O K	40.96	69.32
Mg K	1.91	2.12
Ca K	6.16	4.16
Fe K	45.63	22.12
Cu K	5.34	2.28

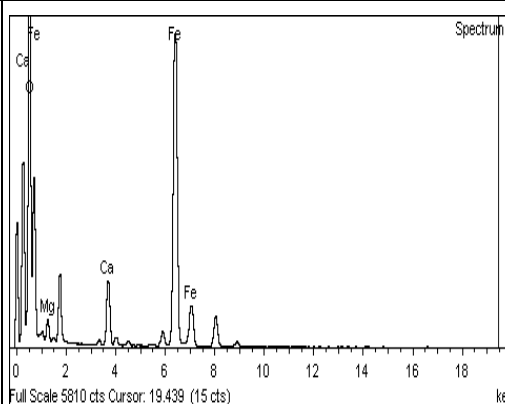
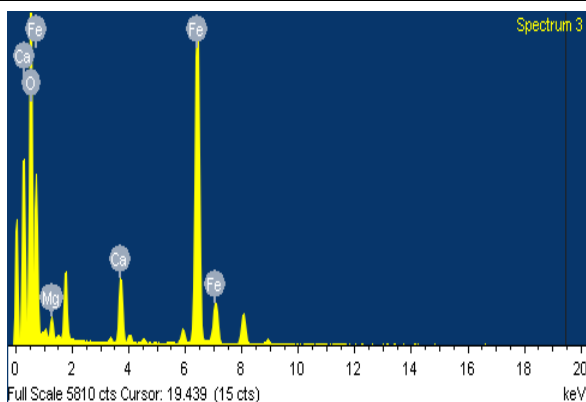
Totals 100.00

Spectrum processing :
Peaks possibly omitted : 1.746, 4.521,
5.417, 9.701, 15.750 keV

After removing the Cu contents

Spectrum Label:
Spectrum 3

Livetime 50.0 s



Element Weight (%) Atomic (%)

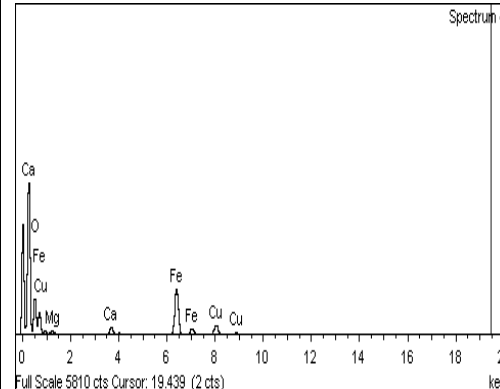
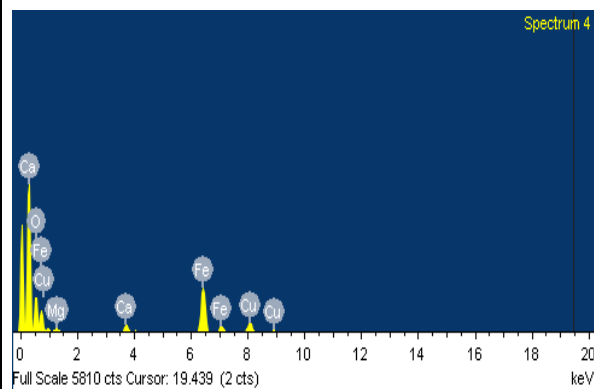
Element	Weight (%)	Atomic (%)
O K	43.27	70.93
Mg K	2.01	2.17
Ca K	6.51	4.26
Fe K	48.21	22.64

Totals 100.00

Spectrum processing :
Peaks possibly omitted : 1.746, 4.521,
5.417, 8.047, 8.912, 9.701, 15.750
keV

Spectrum Label:
Spectrum 4

Livetime 50.0 s



Element Weight (%) Atomic (%)

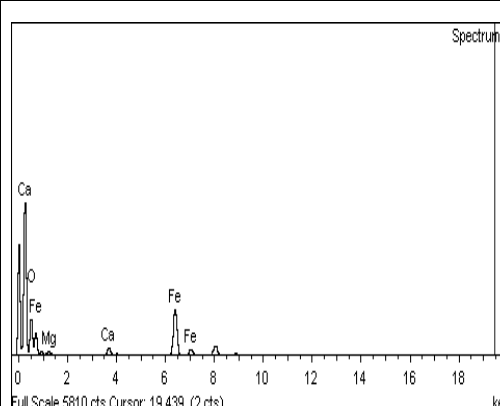
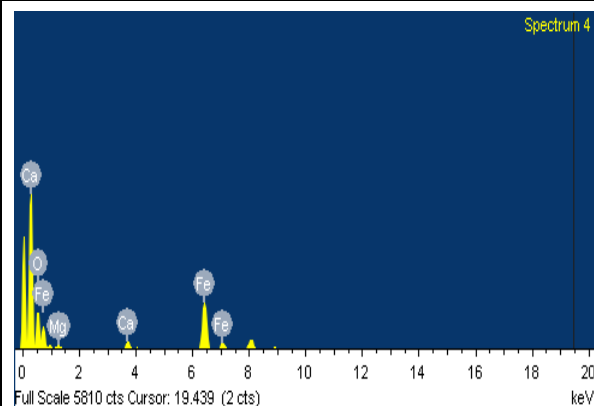
O K	30.59	59.65
Mg K	1.83	2.35
Ca K	5.16	4.01
Fe K	49.25	27.51
Cu K	13.17	6.47

Totals 100.00

After removing the Cu contents

Spectrum Label:
Spectrum 4

Livetime 50.0 s



Element Weight (%) Atomic (%)

O K	35.27	63.81
Mg K	2.13	2.53
Ca K	5.93	4.28
Fe K	56.67	29.37

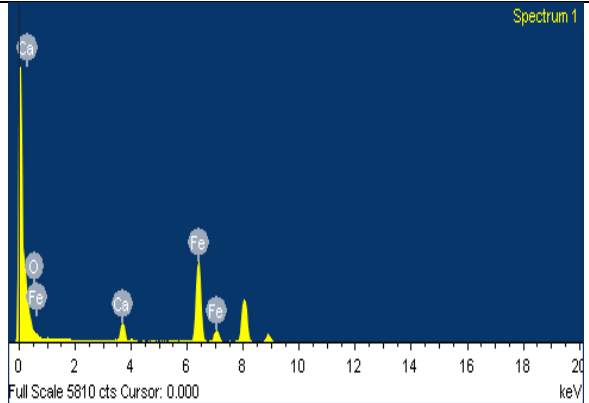
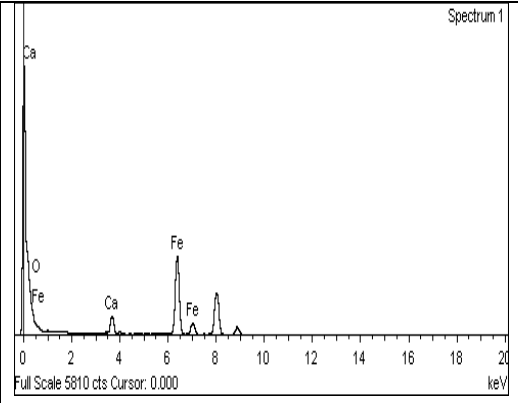
Totals 100.00

Spectrum processing :
Peaks possibly omitted : 8.049, 8.901 keV

Average elemental concentrations :

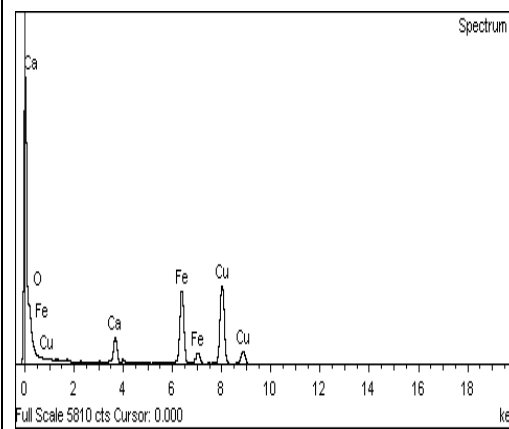
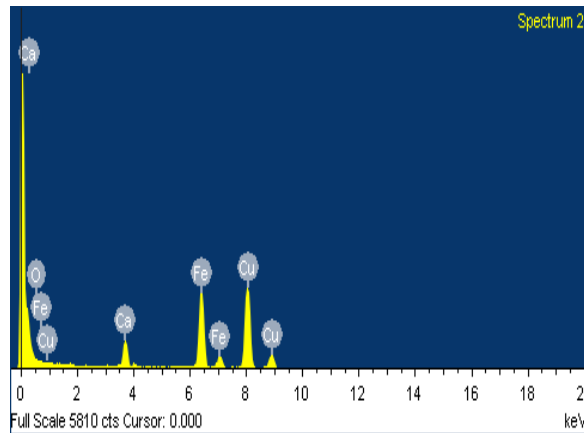
Sample	Element	Weight percentage (%)		Atomic percentage (%)	
		Calculated	Measured	Calculated	Measured
$Mg_{0.2}Ca_{0.8}Fe_2O_4$	Magnesium	2.29	1.94	2.86	1.94
	Calcium	15.08	6.74	11.43	4.26
	Iron	52.53	42.86	28.57	29.37
	Oxygen	30.10	35.27	57.14	63.81

(i) $CaFeO_4$, i.e., $x = 1$.

<p>Spectrum Label: Spectrum 1</p> <p>Live time 50.0 s</p>	 <p>Full Scale 5810 cts Cursor: 0.000 keV</p>	 <p>Full Scale 5810 cts Cursor: 0.000 keV</p>	<table border="1"> <thead> <tr> <th>Element</th> <th>Weight (%)</th> <th>Atomic (%)</th> </tr> </thead> <tbody> <tr> <td>O K</td> <td>0.09</td> <td>0.30</td> </tr> <tr> <td>Ca K</td> <td>13.18</td> <td>17.42</td> </tr> <tr> <td>Fe K</td> <td>86.73</td> <td>82.28</td> </tr> <tr> <td>Totals</td> <td>100.00</td> <td></td> </tr> </tbody> </table>	Element	Weight (%)	Atomic (%)	O K	0.09	0.30	Ca K	13.18	17.42	Fe K	86.73	82.28	Totals	100.00	
Element	Weight (%)	Atomic (%)																
O K	0.09	0.30																
Ca K	13.18	17.42																
Fe K	86.73	82.28																
Totals	100.00																	
<p>Spectrum processing : Peaks possibly omitted : 1.760, 5.390, 8.024, 8.884, 9.676 keV</p>																		

Spectrum Label:
Spectrum 2

Live time 50.0 s



Element Weight (%) Atomic (%)

O K	0.48	1.69
Ca K	8.78	12.45
Fe K	38.57	39.22
Cu K	52.17	46.64

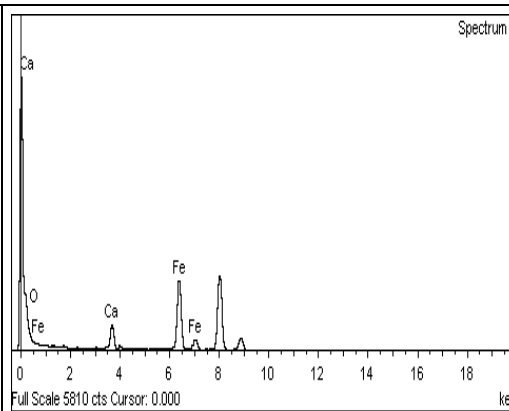
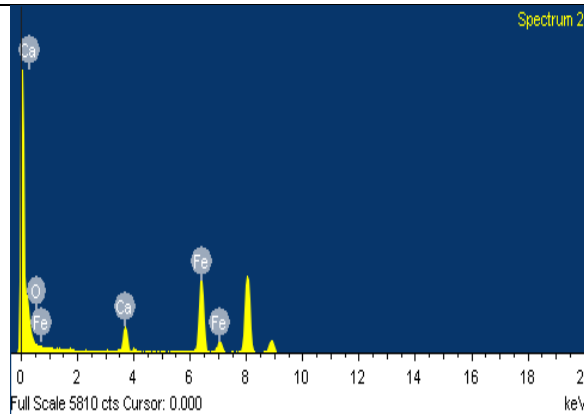
Totals 100.00

Spectrum processing :
Peaks possibly omitted : 1.735, 9.680 keV

After removing the Cu contents

Spectrum Label:
Spectrum 2

Livetime 50.0 s



Element Weight (%) Atomic (%)

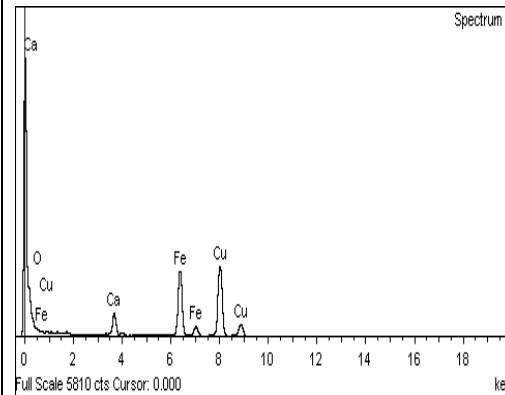
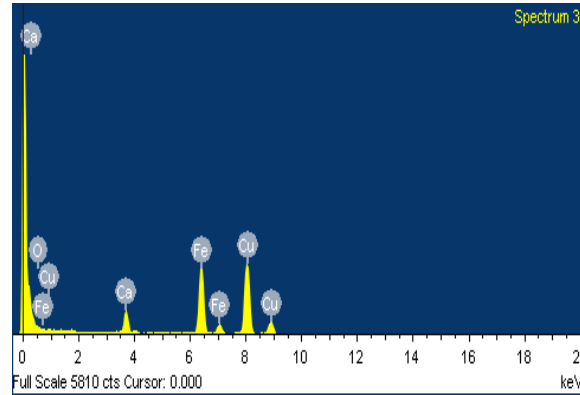
O K	1.00	3.18
Ca K	18.36	23.32
Fe K	80.64	73.50

Totals 100.00

Spectrum processing :
Peaks possibly omitted : 1.735, 8.023, 8.884, 9.680 keV

Spectrum Label:
Spectrum 3

Livetime 50.0 s



Element Weight (%) Atomic (%)

O K	0.48	1.71
Ca K	8.15	11.59
Fe K	38.31	39.10
Cu K	53.06	47.60

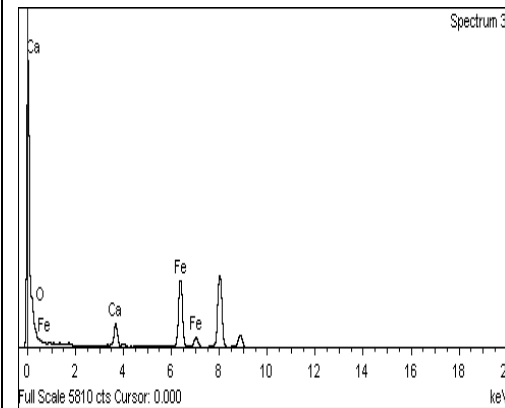
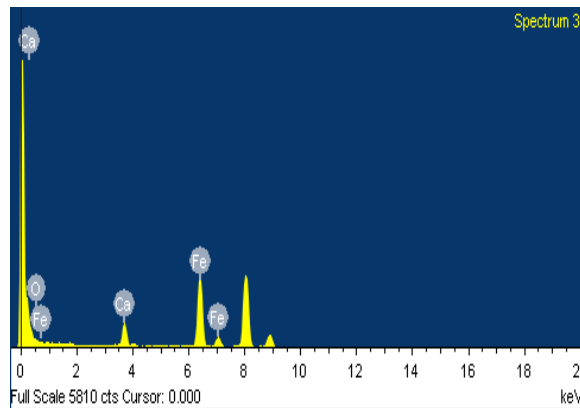
Totals 100.00

Spectrum processing :
Peaks possibly omitted : 1.725, 5.399,
9.693 keV

After removing the Cu contents

Spectrum Label:
Spectrum 3

Livetime 50.0 s



Element Weight (%) Atomic (%)

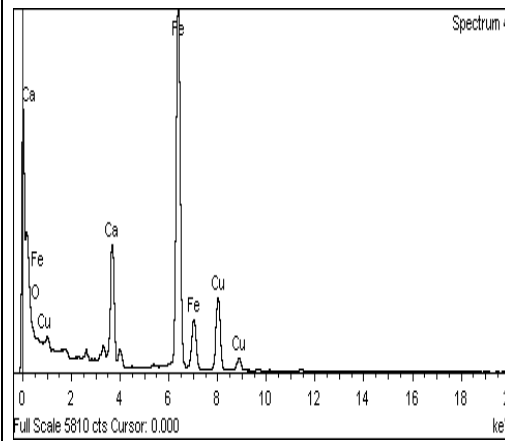
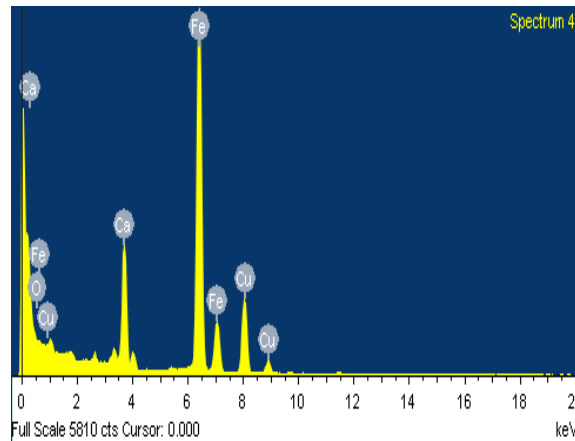
O K	1.07	3.41
Ca K	17.35	22.08
Fe K	81.58	74.51

Totals 100.00

Spectrum processing :
Peaks possibly omitted : 1.725, 5.399,
8.023, 8.884, 9.693 keV

Spectrum Label:
Spectrum 4

Livetime 50.0 s



Element Weight(%) Atomic(%)

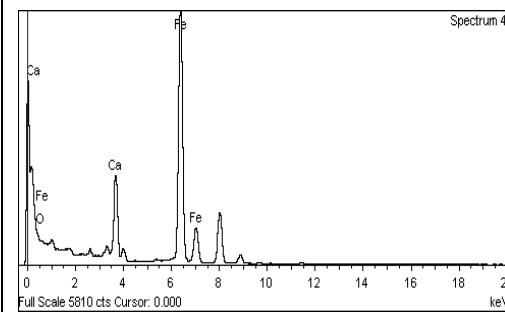
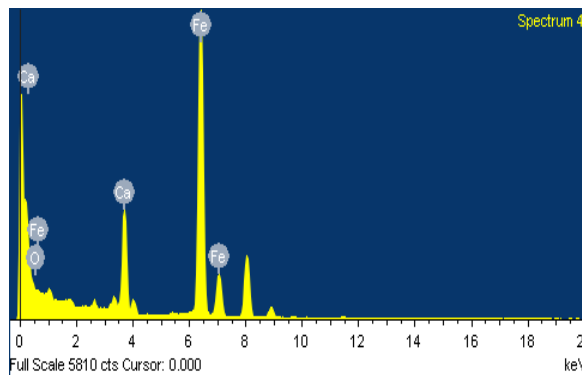
O K	0.16	0.54
Ca K	14.74	19.72
Fe K	68.23	65.51
Cu K	16.87	14.24

Totals 100.00

After removing the Cu contents

Spectrum Label:
Spectrum 4

Live time 50.0 s



Element Weight (%) Atomic (%)

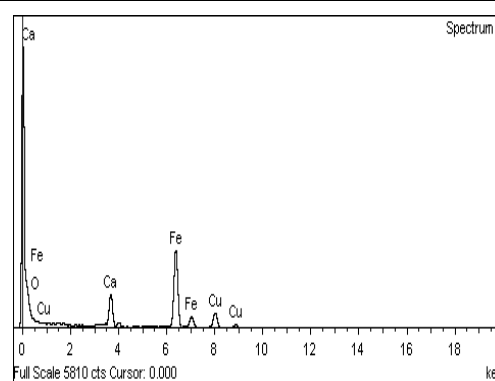
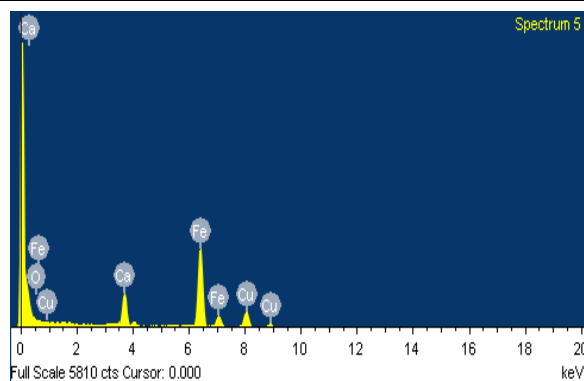
O K	0.16	0.52
Ca K	17.73	23.01
Fe K	82.10	76.47

Totals 100.00

Spectrum processing :
Peaks possibly omitted : 1.762, 2.608,
5.385, 8.022, 8.882, 9.679, 11.420,
16.568, 18.690 keV

Spectrum Label:
Spectrum 5

Livetime 50.0 s



Element Weight (%) Atomic (%)

O K	0.14	0.45
Ca K	17.88	23.62
Fe K	66.01	62.60
Cu K	15.98	13.32

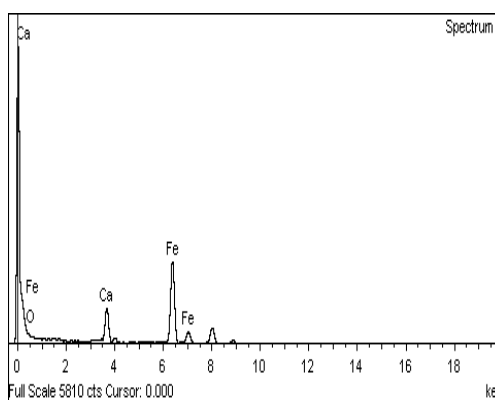
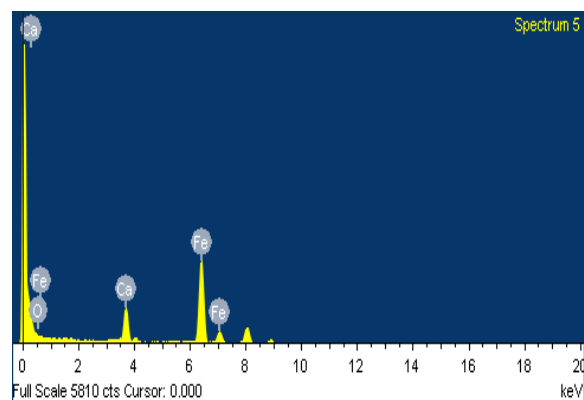
Totals 100.00

Spectrum processing :
Peaks possibly omitted : 9.699, 11.505 keV

After removing the Cu contents

Spectrum Label:
Spectrum 5

Livetime 50.0 s



Element Weight (%) Atomic (%)

O K	0.19	0.60
Ca K	21.27	27.23
Fe K	78.54	72.17

Totals 100.00

Spectrum processing :
Peaks possibly omitted : 8.023, 8.884, 9.699, 11.505 keV

Average elemental concentrations :

Sample	Element	Weight percentage (%)		Atomic percentage (%)	
		Calculated	Measured	Calculated	Measured
CaFe ₂ O ₄	Magnesium	0	0	0	0
	Calcium	18.57	17.58	14.28	22.61
	Iron	51.77	81.92	28.57	75.79
	Oxygen	29.66	0.502	57.15	1.602