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Supporting information for:

Structural and Photoluminescence Properties of Eu^{3+} Doped α-Ag_2WO_4 Synthesized by the Green Coprecipitation Methodology

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Figure SI1. Rietveld refinement plot of α-$Ag_{2-3x}Eu_xWO_4$ synthesized by the coprecipitation method at 90 °C for 30 minutes. (a) x = 0.0025, (b) x = 0.005, (c) x = 0.0075 and (d) x = 0.01.

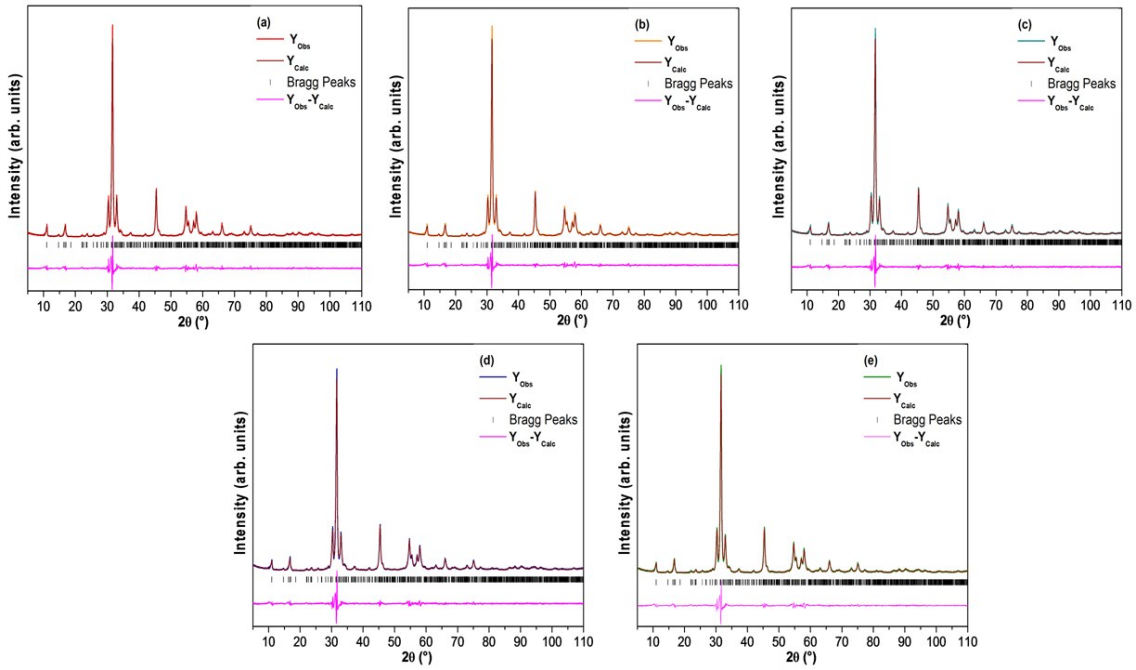


Table SI1. Lattice parameters, unit cell volume and statistical parameters of quality obtained by Rietveld refinement for the α-$Ag_{2-3x}Eu_xWO_4$ (x = 0, 0.0025, 0.005, 0.0075 and 0.01 mol%) crystals synthesized by coprecipitation method at 90 ºC for 30 minutes.

Refined formula (α-$Ag_{2-3x}Eu_xWO_4$)	Lattice Parameters			Cell volume (Å^3)	R_{Bragg} (%)	χ^2 (%)	R_{wp} (%)	R_p (%)
	a (Å)	b (Å)	c (Å)					
***x* = 0**	10.8834(5)	12.0377(6)	5.9071(6)	773.91(4)	2.28	2.30	10.84	8.53
***x* = 0.0025**	10.8757(5)	12.0387(6)	5.9071(9)	773.43(5)	2.13	2.17	10.03	7.92
***x* = 0.0050**	10.8716(5)	12.0323(6)	5.9025(4)	772.11(4)	2.06	1.95	9.77	7.69
***x* = 0.0075**	10.8661(5)	12.0326(6)	5.9024(1)	771.72(5)	2.01	1.90	9.84	7.76
***x* = 0.01**	10.8679(5)	12.0280(6)	5.9006(1)	771.33(4)	2.05	1.83	9.07	7.17
[1]	10.878(4)	12.0090(5)	5.8950(1)	770.09(4)	-	-	-	-
[1]	10.886(6)	12.0140(1)	5.8930(5)	770.82(6)	-	-	-	-
[2]	5.92	10.89	12.03	776.00	-	-	-	-

Table SI2. Atomic coordinates of the α-$Ag_{2-3x}Eu_xWO_4$ (x = 0, 0.0025 and 0.005) samples.

α-$Ag_{2-3x}Eu_xWO_4$									
Atom	***x* = 0**			***x* = 0.0025**			**x = 0.0050**		
	x	**y**	**z**	**x**	**y**	**z**	**x**	**y**	**z**
$W1$	0.2553(7)	-0.0013(5)	0.5229(3)	0.2551(2)	-0.0009(1)	0.5224(7)	0.2552(4)	-0.0012(8)	0.5228(4)
$W2$	0.000	0.8461(5)	0.500	0.000	0.8465(9)	0.500	0.000	0.8462(2)	0.500
$W3$	0.000	0.1366(5)	0.500	0.000	0.1370(9)	0.500	0.000	0.1367(2)	0.500
$Ag1$	0.7532(7)	0.1728(1)	0.9897(4)	0.7527(9)	0.1723(1)	0.9902(1)	0.7528(6)	0.1725(2)	0.9902(4)
$Ag2$	0.2372(7)	0.8193(1)	0.0112(4)	0.2367(9)	0.8188(2)	0.0117(1)	0.2368(6)	0.8190(2)	0.0117(5)
$Ag3$	0.000	0.9889(1)	0.000	0.000	0.9884(1)	0.000	0.000	0.98862	0.000
$Ag4$	0.000	0.6548(1)	0.000	0.000	0.6543(1)	0.000	0.000	0.65452	0.000
$Ag5$	0.000	0.3165(1)	0.000	0.000	0.316	0.000	0.000	0.31622	0.000
$Ag6$	0.000	0.5109(2)	0.500	0.000	0.5104(2)	0.500	0.000	0.51062	0.500
$O1$	0.3602(9)	0.6096(8)	0.1649(3)	0.3619(9)	0.6177(2)	0.1688(6)	0.3611(2)	0.6138(3)	0.1693(1)
$O2$	0.3602(9)	0.3756(8)	0.1579(3)	0.3619(9)	0.3837(2)	0.1618(6)	0.36112)	0.3798(2)	0.1623(1)
$O3$	0.4112(9)	0.7326(8)	0.7849(3)	0.4129(9)	0.7407(2)	0.7888(6)	0.4121(2)	0.7368(2)	0.7893(1)
$O4$	0.4172(8)	0.2606(8)	0.7619(3)	0.4189(9)	0.2687(1)	0.7658(6)	0.4181(2)	0.2648(2)	0.7663(1)
$O5$	0.1542(8)	0.4916(8)	0.2519(3)	0.1559(9)	0.4997(2)	0.25586( )	0.1551(2)	0.4958(2)	0.2563(1)
$O6$	0.4062(8)	0.4936(8)	0.8169(3)	0.4079(9)	0.5017(2)	0.8208)(6)	0.4071(2)	0.4978(2)	0.8213(1)
$O7$	0.1812(8)	0.6096(8)	0.8269(3)	0.1829(9)	0.6177(2)	0.8308(6)	0.1821(2)	0.6138(3)	0.8313(1)
$O8$	0.1852(9)	0.3766(8)	0.8699(3)	0.1869(9)	0.3847(1)	0.8738(6)	0.1861(2)	0.3808(3)	0.8743(1)

Table SI3. Atomic Coordinates of the α-$Ag_{2-3x}Eu_xWO_4$ (x = 0.0075 and 0.01) samples.

Atom	α-$Ag_{2-3x}Eu_xWO_4$					
	***x* = 0.0075**			***x* = 0.01**		
	x	**y**	**z**	**x**	**y**	**z**
$W1$	0.2552(5)	-0.0012(3)	0.5228(6)	0.2553(4)	-0.0018(8)	0.5224(8)
$W2$	0.000	0.8462(7)	0.500	0.000	0.8456(2)	0.500
$W3$	0.000	0.1367(7)	0.500	0.000	0.1361(2)	0.500
$Ag1$	0.7531(7)	0.1725(1)	0.9907(2)	0.7530(2)	0.1712(4)	0.9915(5)
$Ag2$	0.2371(7)	0.8190(1)	0.0122(2)	0.2370(2)	0.8187(8)	0.0130(5
$Ag3$	0.000	0.9886(1)	0.000	0.000	0.9883(8)	0.000
$Ag4$	0.000	0.6545(1)	0.000	0.000	0.6542(8)	0.000
$Ag5$	0.000	0.3162(1)	0.000	0.000	0.3159(8)	0.000
$Ag6$	0.000	0.5106(1)	0.500	0.000	0.5103(8)	0.500
$O1$	0.3632(5)	0.6198(8)	0.1713(3)	0.3637(8)	0.6187(9)	0.1657(7)
$O2$	0.3632(5)	0.3858(8)	0.1643(3)	0.3637(8)	0.3847(9)	0.1587(7)
$O3$	0.4142(5)	0.7428(8)	0.7913(3)	0.4147(8)	0.7417(9)	0.7857((6)
$O4$	0.4202(5)	0.2708(8)	0.7683(3)	0.4207(8))	0.2697(9)	0.7627(6)
$O5$	0.1572(5)	0.5018((8)	0.2583(3)	0.1577(8)	0.5007(9)	0.2527(6)
$O6$	0.4092(5)	0.5038(8)	0.8233(1)	0.4097(8)	0.5027(9)	0.8177(6)
$O7$	0.1842(5)	0.3868(8)	0.8333(3)	0.1847(8)	0.6187(9)	0.8277(6)
$O8$	0.1882(5)	0.3868(8)	0.8763(3)	0.1887(8)	0.3857(9)	0.8707(6)

Figure SI2. CIE diagram coordinates of the α-$Ag_{2-3x}Eu_xWO_4$ synthesized by the coprecipitation method at 90 °C for 30 minutes, using Xe lamp as excitation source. (a) x = 0.0025, (b) x = 0.005, (c) x = 0.0075 and (d) x = 0.01.

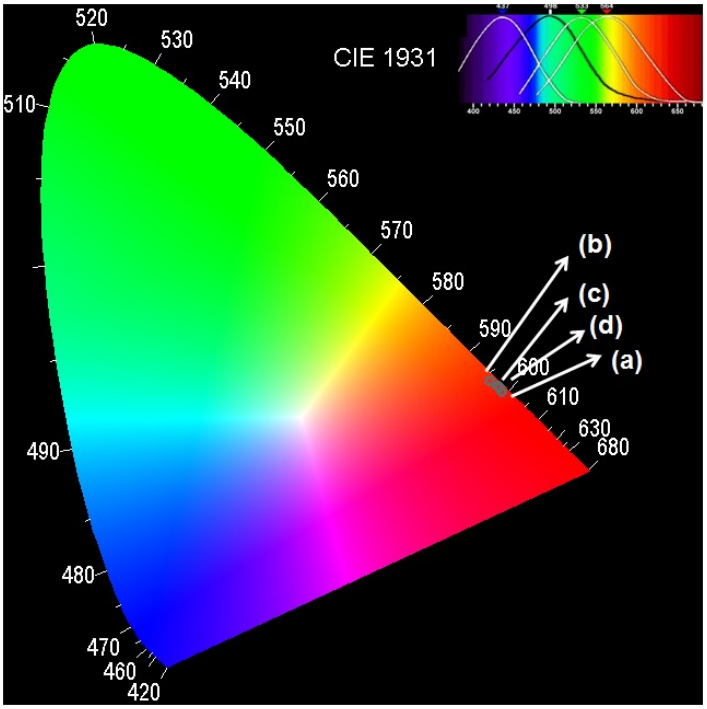
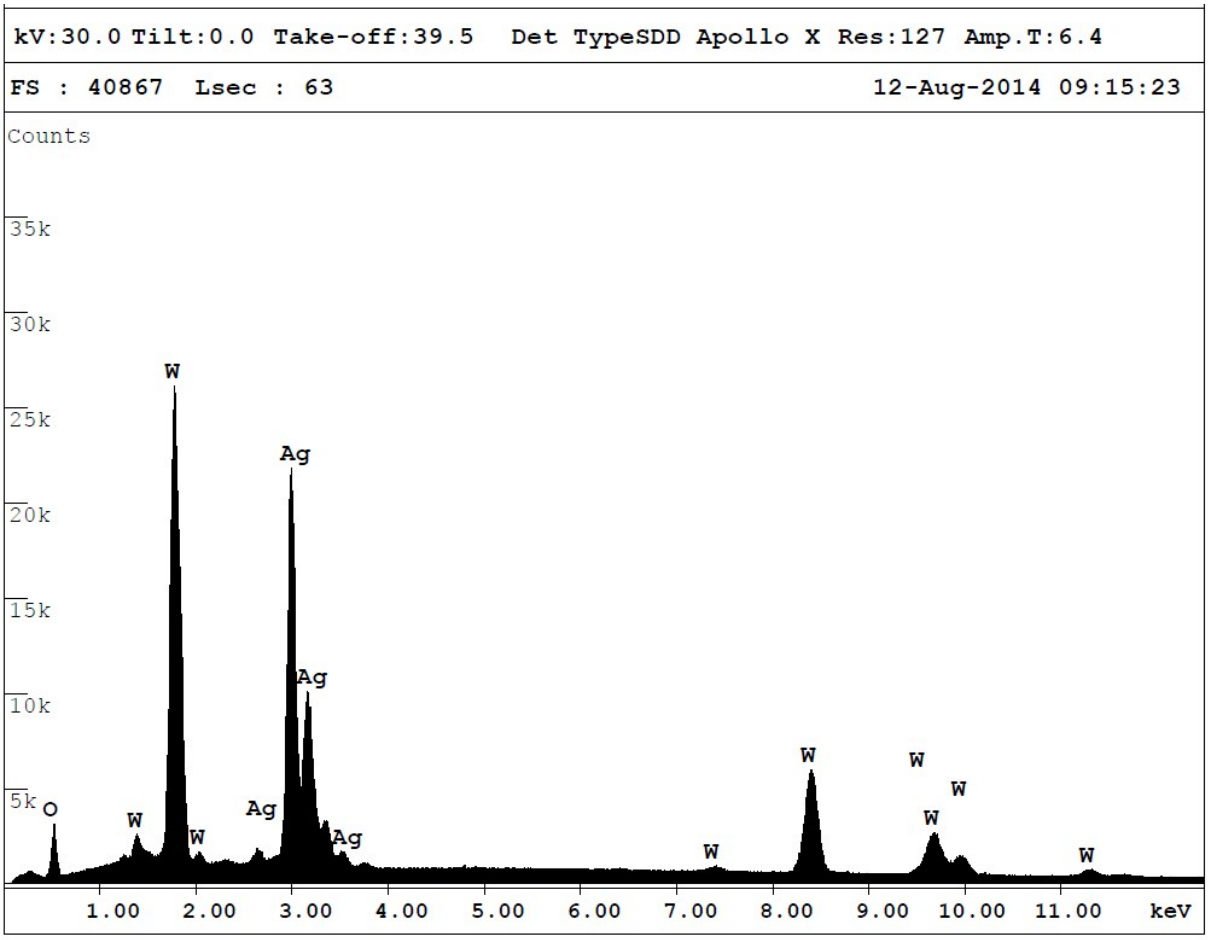


Table SI4. Chromatic coordinates x and y for α-$Ag_{2-3x}Eu_xWO_4$ (x = 0.0025, 0.005, 0.0075 and 0.01 mol) synthesized by the coprecipitation method at 90 °C for 30 minutes, using Xe lamp as excitation source.

α-$Ag_{2-3x}Eu_xWO_4$	**Chromatic coordinate**	
	x	**y**
x = 0.0025	0.616	0.370
x = 0.005	0.600	0.383
x = 0.0075	0.611	0.376
x = 0.01	0.613	0.374

Figure SI3. EDS spectra of the α-$Ag_{2-3x}Eu_xWO_4$ synthesized by the coprecipitation method at 90 °C for 30 minutes.

(a) x = 0

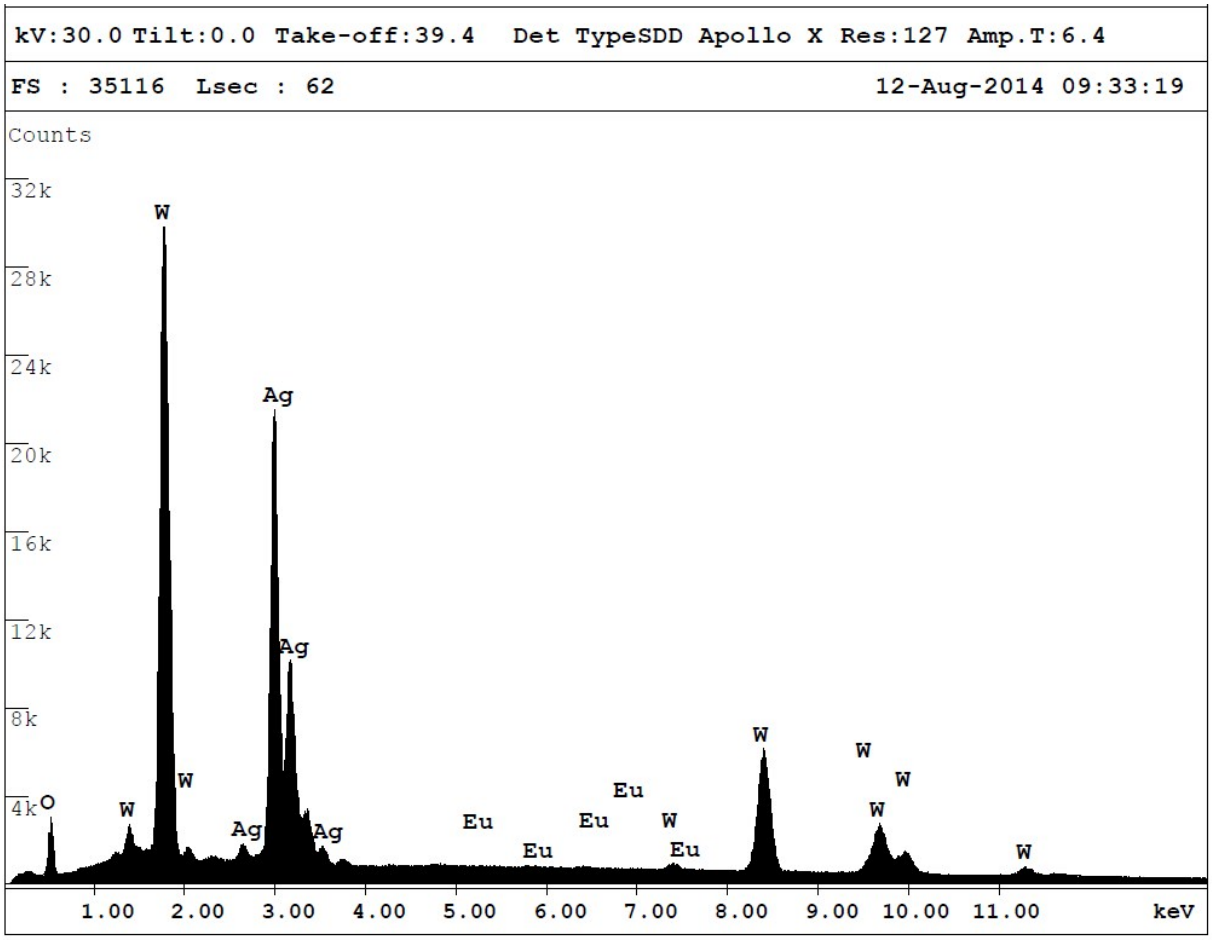


EDAX ZAF Quantification (Standardless)
Element Normalized
SEC Table : Default

Element	Wt %	At %	K-Ratio	Z	A	F
O K	9.63	46.63	0.0137	1.2252	0.1158	1.0001
AgL	51.54	37.01	0.3455	0.9959	0.6731	1.0000
W L	38.83	16.36	0.3534	0.9114	0.9985	1.0000
Total	100.00	100.00				

Element	Net Inte.	Bkgd Inte.	Inte. Error	P/B
O K	211.81	34.84	0.99	6.08
AgL	2805.72	164.81	0.25	17.02
W L	1114.37	139.99	0.42	7.96

(b) x = 0.0025

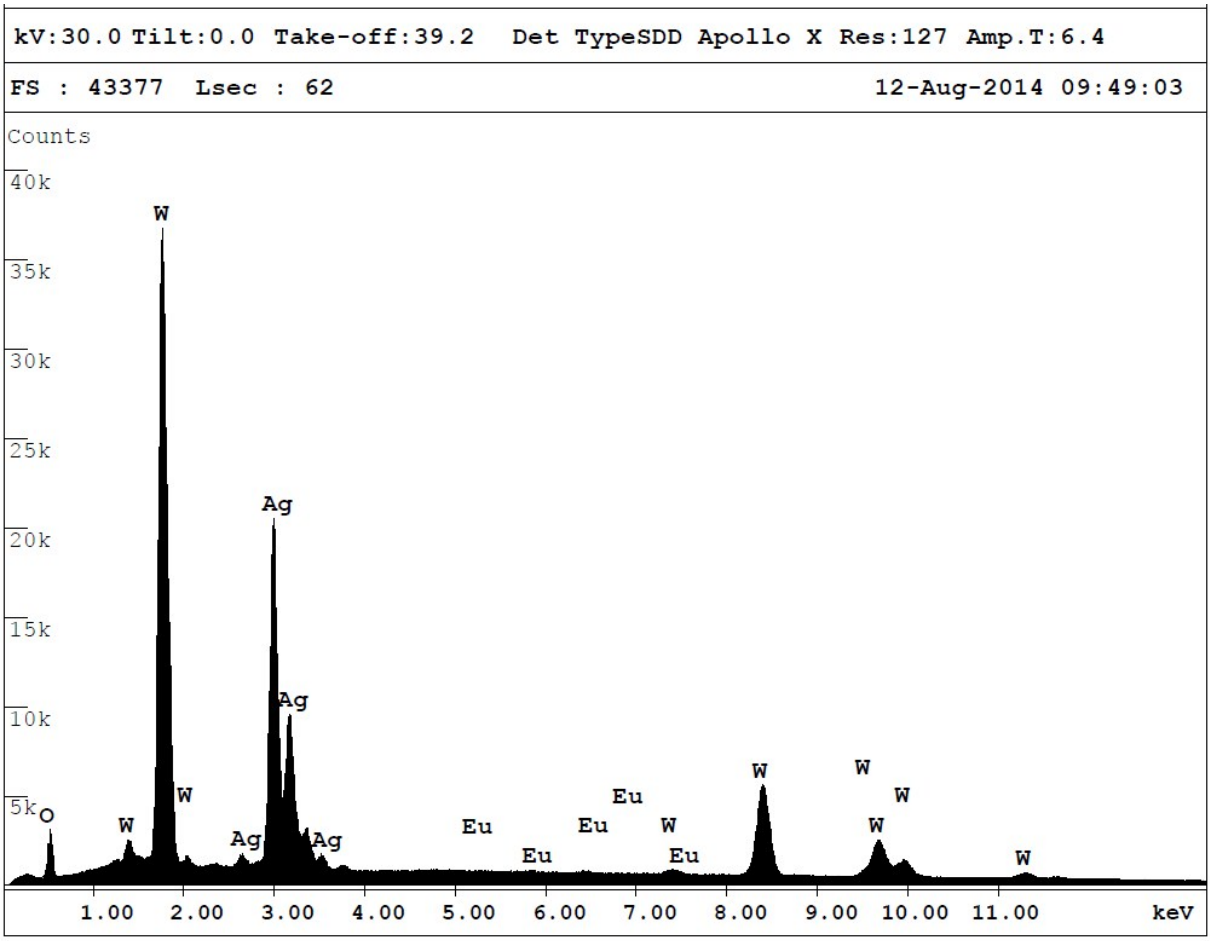


EDAX ZAF Quantification (Standardless)
Element Normalized
SEC Table : Default

Element	Wt %	At %	K-Ratio	Z	A	F
O K	8.98	44.72	0.0127	1.2279	0.1152	1.0001
AgL	51.76	38.23	0.3463	0.9986	0.6700	1.0000
EuL	0.33	0.17	0.0028	0.9481	0.8768	1.0264
W L	38.93	16.87	0.3547	0.9137	0.9971	1.0000
Total	100.00	100.00				

Element	Net Inte.	Bkgd Inte.	Inte. Error	P/B
O K	198.47	40.51	1.06	4.90
AgL	2836.69	165.57	0.25	17.13
EuL	13.77	159.64	16.74	0.09
W L	1128.98	140.79	0.42	8.02

(c) x = 0.005

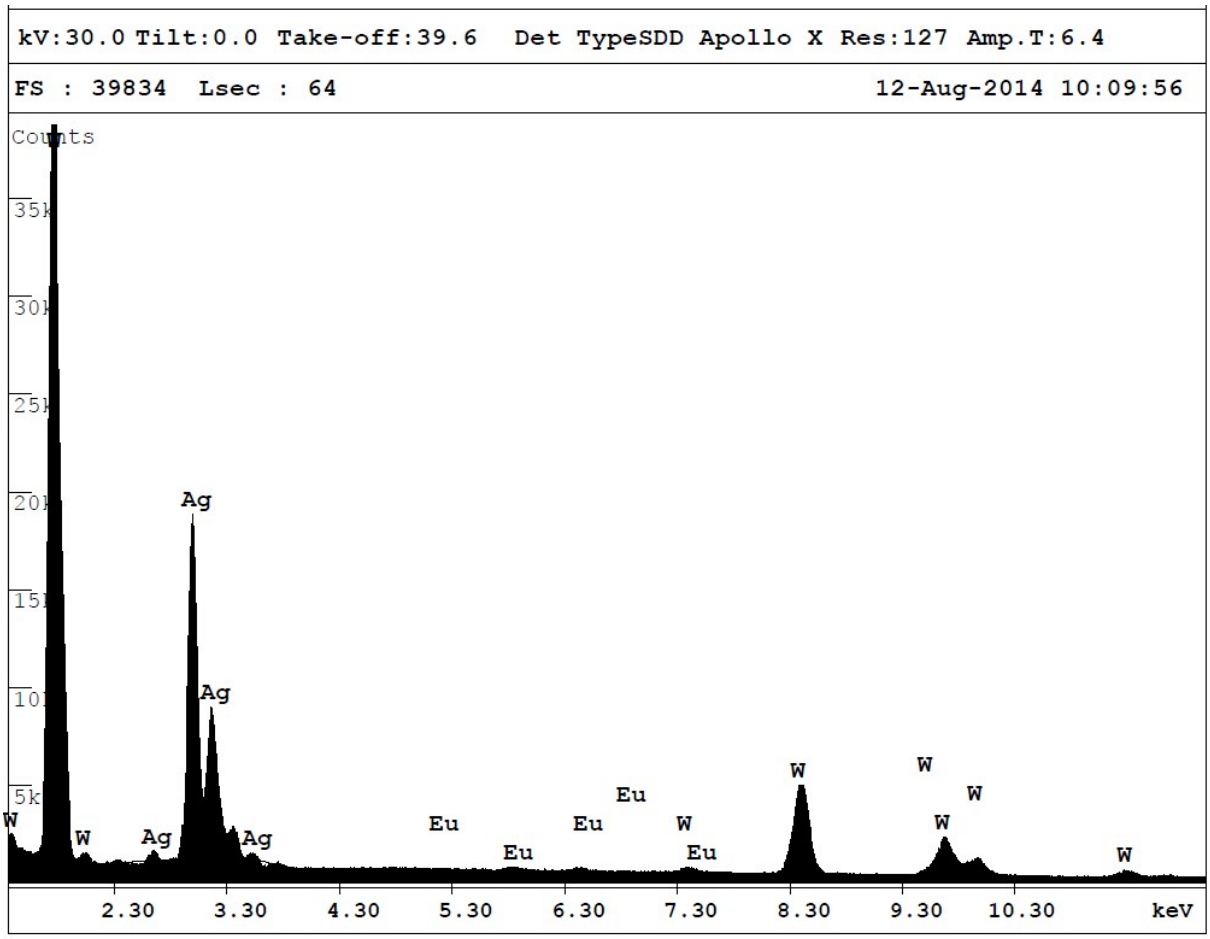


EDAX ZAF Quantification (Standardless)
Element Normalized
SEC Table : Default

Element	Wt %	At %	K-Ratio	Z	A	F
O K	9.60	46.52	0.0136	1.2253	0.1158	1.0001
AgL	51.50	37.03	0.3452	0.9960	0.6730	1.0001
EuL	0.48	0.25	0.0041	0.9459	0.8784	1.0261
W L	38.42	16.21	0.3493	0.9114	0.9976	1.0000
Total	100.00	100.00				

Element	Net Inte.	Bkgd Inte.	Inte. Error	P/B
O K	201.17	42.75	1.06	4.71
AgL	2677.11	158.17	0.26	16.93
EuL	19.10	154.06	11.98	0.12
W L	1053.42	136.22	0.44	7.73

(d) x = 0.0075

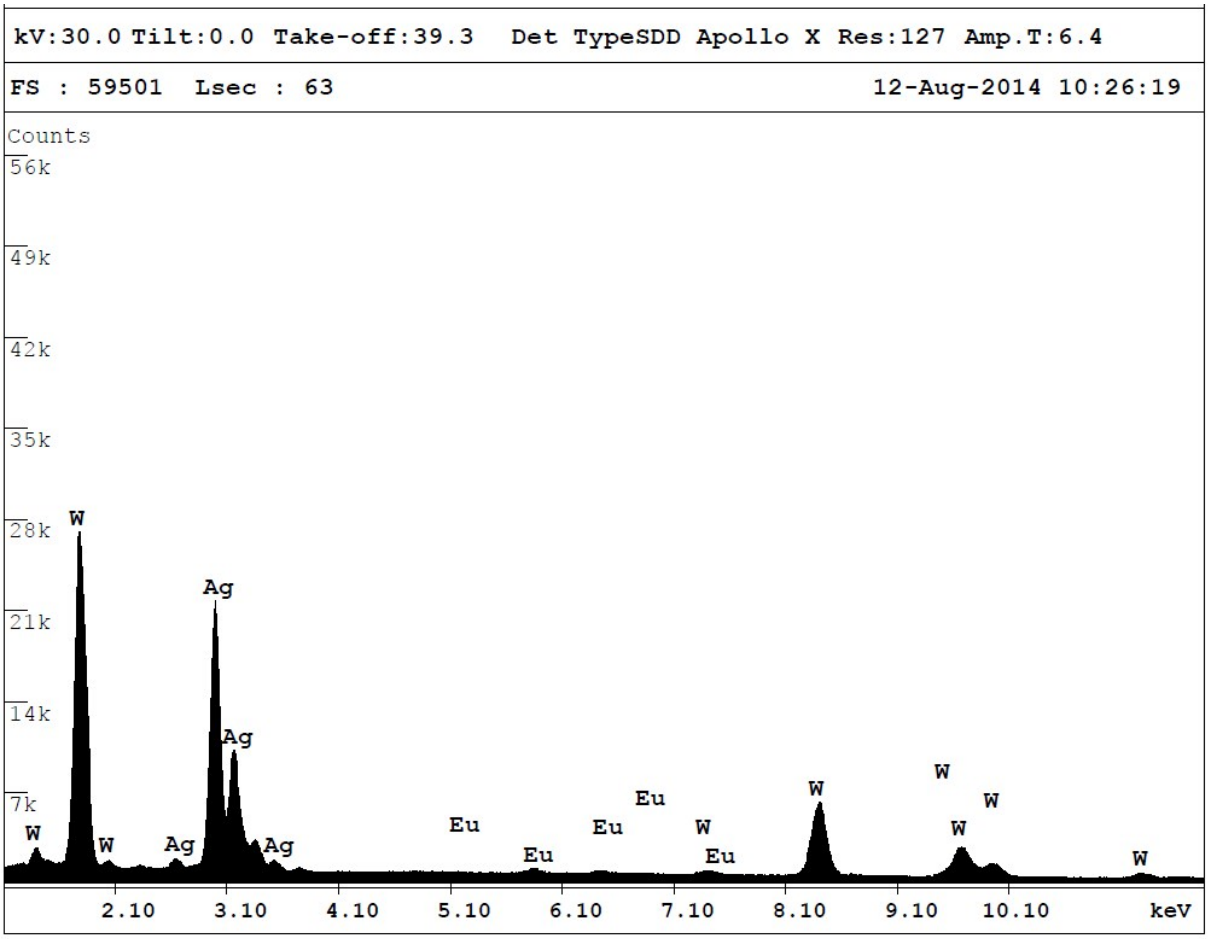


EDAX ZAF Quantification (Standardless)
Element Normalized
SEC Table : Default

Element	Wt %	At %	K-Ratio	Z	A	F
O K	10.52	49.16	0.0151	1.2219	0.1177	1.0001
AgL	50.25	34.82	0.3368	0.9928	0.6751	1.0001
EuL	0.94	0.46	0.0080	0.9431	0.8829	1.0262
W L	38.29	15.57	0.3472	0.9086	0.9981	1.0000
Total	100.00	100.00				

Element	Net Inte.	Bkgd Inte.	Inte. Error	P/B
O K	203.27	32.55	1.01	6.24
AgL	2365.59	212.01	0.28	11.16
EuL	33.69	139.00	6.55	0.24
W L	946.08	119.62	0.45	7.91

(e) x = 0.01



EDAX ZAF Quantification (Standardless)
Element Normalized
SEC Table : Default

Element	Wt %	At %	K-Ratio	Z	A	F
O K	10.00	47.83	0.0144	1.2246	0.1176	1.0001
AgL	49.67	35.25	0.3299	0.9954	0.6671	1.0002
EuL	1.35	0.68	0.0116	0.9453	0.8817	1.0265
W L	38.98	16.23	0.3540	0.9110	0.9968	1.0000
Total	100.00	100.00				

Element	Net Inte.	Bkgd Inte.	Inte. Error	P/B
O K	231.94	36.68	0.95	6.32
AgL	2787.91	173.83	0.25	16.04
EuL	58.65	166.12	4.25	0.35
W L	1162.60	140.22	0.41	8.29

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1. L. S. Cavalcante, M. A. Almeida, W. Avansi, Jr., R. L. Tranquilin, E. Longo, N. C. Batista, V. R. Mastelaro and M. S. Li, *Inorg. Chem.*, 2012, **51**, 10675-10687.
2. J. Tang and J. Ye, *J. Mater. Chem.*, 2005, **15**, 4246.