Instructions for OES Spectrometer Lab Report

The report for the lab should be **typed by a computer** and consist of:

i. A **Cover Page** with "Student Name", "Student ID Number" and "Lab. Group".

ii. An **Introduction** that briefly introduces the concept of qualitative and quantitative analysis for metals, discusses its importance in quantitative characterization, and clearly states the aims of the experiment. A background section that briefly discusses

   a. Quantitative analysis methods for metals in general.
   b. Spark OES analysis in detail.

iii. **Equipment & Materials** which were used in the experiment

iv. An **Experimental Procedure** section that carefully summarizes the method used.

v. A **Results & Discussion** section. Calculate the mean quantity and standard deviation for each element in each analysis given to your lab. group specifically. Explain and discuss the analysis results, try to find out the material given to your lab. group.

vi. References (American Ceramic Society Style, complete citation).

Group A (Monday 14:00-16:00)

Meas.	C	Si	Mn	P	S	Cr	Mo	Ni	Al	Co
	%	%	%	%	%	%	%	%	%	%
1	0.411	0.456	1.41	0.0119	0.0569	0.172	0.0068	0.0256	0.0177	0.0086
2	0.404	0.446	1.36	0.0109	0.0464	0.165	0.0062	0.0244	0.0176	0.0088
3	0.413	0.452	1.39	0.0108	0.0512	0.172	0.0056	0.0240	0.0176	0.0095

Meas.	Cu	Ti	V	W	Sn	As	Bi	Ca	Sb	Se
	%	%	%	%	%	%	%	%	%	%
1	0.0155	0.0018	0.0730	0.0104	0.0103	0.0115	0.0113	0.0017	0.0086	0.0020
2	0.0151	0.0018	0.0703	0.0118	0.0092	0.0133	0.0112	0.0014	0.0090	0.0025
3	0.0153	0.0017	0.0718	0.0120	0.0093	0.0128	0.0110	0.0016	0.0090	0.0042

Meas.	Te	Zn	N	Fe
	%	%	%	%
1	0.0023	0.0205	0.0119	97.2
2	0.0025	0.0085	0.0108	97.3
3	0.0028	0.0038	0.0114	97.3

Group D (Wednesday 15:00-17:00)

Meas.	Zn	Pb	Sn	P	Mn	Fe	Ni	Si	Mg	Cr
	%	%	%	%	%	%	%	%	%	%
1	37.88	1.27	0.0723	0.0030	0.0019	0.0633	0.0196	0.0100	0.00074	0.00026
2	37.86	1.26	0.0715	0.0034	0.0019	0.0630	0.0195	0.0097	0.00073	<0.00020
3	37.67	1.25	0.0716	0.0041	0.0019	0.0635	0.0223	0.0096	0.00072	0.00020

Meas.	Te	As	Sb	Cd	Bi	Ag	Co	Al	S	Be
	%	%	%	%	%	%	%	%	%	%
1	<0.00030	0.0127	0.0424	0.0013	<0.00060	0.0048	0.0052	0.745	0.0016	<0.00010
2	<0.00030	0.0112	0.0410	0.0013	<0.00060	0.0048	0.0056	0.749	0.0015	<0.00010
3	<0.00030	0.0124	0.0444	0.0013	<0.00060	0.0049	0.0057	0.742	0.0015	<0.00010

Meas.	Zr	Au	B	C	Ti	Se	Nb	Pt	Bg	Cu
	%	%	%	%	%	%	%	%		%
1	<0.00020	<0.00050	0.00027	0.0076	<0.00020	<0.00080	<0.00100	<0.0020		59.9
2	<0.00020	<0.00050	0.00029	0.0040	<0.00020	<0.00080	<0.00100	<0.0020		59.9
3	<0.00020	<0.00050	0.00028	0.0029	<0.00020	<0.00080	<0.00100	<0.0020		60.1

Group E (Thursday 11:00-13:00)

	Si Conc %	Fe Conc %	Cu Conc %	Mn Conc %	Mg Conc %	Cr Conc %	Ni Conc %	Zn Conc %	Ti Conc %	Ag Conc %	B Conc %	Ba Conc %	Be Conc %
1	0.036	0.082	1.59	0.009	1.56	0.005	0.001	5.32	0.051	0.0008	0.001	0.0001	<0.0001
2	0.043	0.096	1.88	0.009	1.75	0.005	0.002	5.71	0.035	0.0009	0.001	0.0001	<0.0001
3	0.036	0.064	1.52	0.009	1.54	0.005	0.0010	5.33	0.057	0.0008	0.0009	0.0001	<0.0001

	Bi Conc %	Ca Conc %	Cd Conc %	Ce Conc %	Co Conc %	Ga Conc %	Hg Conc %	In Conc %	La Conc %	Li Conc %	Mo Conc %	Na Conc %	P Conc %
1	<0.0010	0.003	0.001	<0.002	<0.0005	0.007	0.001	<0.0003	<0.0003	<0.0001	0.011	0.0005	0.002
2	<0.0010	0.004	0.001	<0.002	<0.0005	0.007	<0.0010	<0.0003	<0.0003	<0.0001	0.010	0.0005	0.001
3	<0.0010	0.003	0.001	<0.002	<0.0005	0.007	<0.0010	<0.0003	<0.0003	<0.0001	0.011	0.0008	0.001

	Pb Conc %	Sb Conc %	Sn Conc %	Sr Conc %	V Conc %	Zr Conc %	Sc Conc %	Bg %	Al Conc %
1	0.004	<0.003	<0.0005	<0.0001	0.016	0.13	<0.050	--	91.1
2	0.003	<0.003	<0.0005	<0.0001	0.013	0.12	<0.050	--	90.2
3	0.003	<0.003	<0.0005	<0.0001	0.017	0.14	<0.050	--	91.2

Group C (Thursday 16:00-18:00)

Meas.	Al	Sn	Zr	Mo	V	C	Si	Mn	Cr	Ni
	%	%	%	%	%	%	%	%	%	%
1	7.27	0.323	<0.00100	<0.0040	4.86	0.0677	0.0566	<0.0050	0.0087	0.0073
2	7.26	0.346	<0.00100	<0.0040	4.75	0.0691	0.0527	<0.0050	0.0086	0.0064
3	7.27	0.330	<0.00100	<0.0040	4.74	0.0658	0.0485	<0.0050	0.0086	0.0069

Meas.	Fe	Cu	Nb	Pd	Y	Ru	Ti
	%	%	%	%	%	%	%
1	0.183	0.0055	0.0342	0.0109	0.0051	<0.0050	87.1
2	0.173	0.0052	0.0352	0.0104	0.0052	<0.0050	87.3
3	0.175	0.0068	0.0359	0.0113	0.0057	<0.0050	87.3