Electronic Supplementary Material (ESI) for Analytical Methods.

Table 1.1 The effect of dithizone concentration for copper determination.

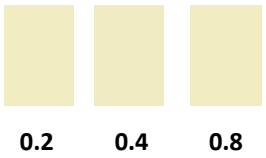
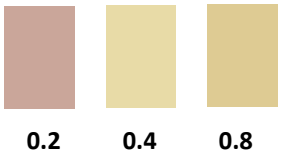
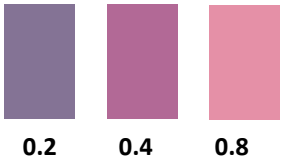
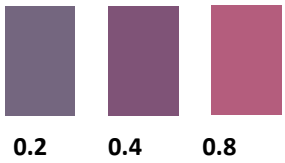
Concentration of dithizone (%w/v)	Images of copper(II)–dithizone complexes (mg L^{-1})	R-squared	Slope of Red value
0.0015		0.6233	15.17
0.0025		0.7446	115.83
0.0050		0.9921	155.82
0.0100		0.9705	139.45

Table 1.2 The effect of dithizone concentration for zinc determination.

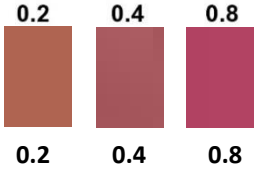
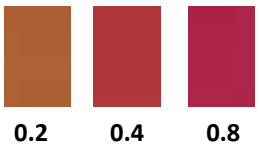
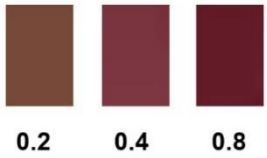
Concentration of dithizone (%w/v)	Images of zinc(II)–dithizone complexes (mg L^{-1})	R-squared	Slope of Red value
0.0015		0.9989	44.16
0.0025		0.9443	122.14
0.0050		0.9897	150.95
0.0100		0.0611	66.78

Table 1.3 The effect of dithizone concentration for lead determination.

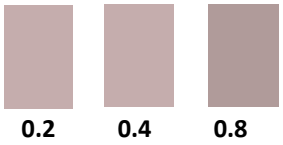
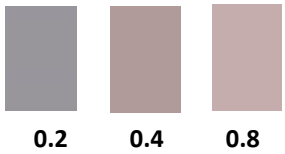
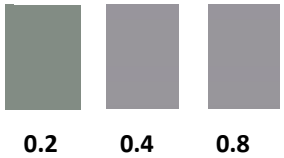
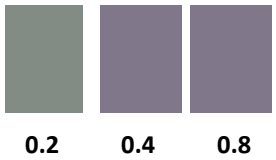
Concentration of dithizone (%w/v)	Images of Lead(II)–dithizone complexes (mg L^{-1})	R-squared	Slope of Red value
0.0015	 **0.2** **0.4** **0.8**	0.7989	57.76
0.0025	 **0.2** **0.4** **0.8**	0.9403	190.02
0.0050	 **0.2** **0.4** **0.8**	0.6097	72.45
0.0100	 **0.2** **0.4** **0.8**	0.6611	46.78

Table 1.4 The effect of dithizone concentration for cadmium determination

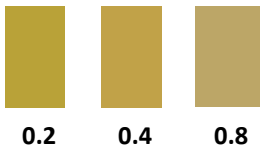
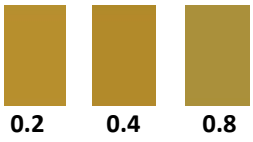
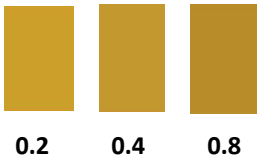
Concentration of dithizone (%w/v)	Images of Cadmium(II)–dithizone complexes (mg L^{-1})	R-squared	Slope of Red value
0.0015	 **0.2** **0.4** **0.8**	0.3708	19.16
0.0025	 **0.2** **0.4** **0.8**	0.8987	140.14
0.0050	 **0.2** **0.4** **0.8**	0.9359	206.95
0.0100	 **0.2** **0.4** **0.8**	0.9007	120.78

Table 2.1 The effect of dithizone volume for copper determination.

Volume of dithizone (mL)	Images of copper(II)–dithizone complexes (mg L^{-1})	R-squared	Slope of Red value
0.5	 **0.2** **0.4** **0.8**	0.8233	59.17
1.0	 **0.2** **0.4** **0.8**	0.8446	78.56
1.25	 **0.2** **0.4** **0.8**	0.9721	134.52
1.5	 **0.2** **0.4** **0.8**	0.9905	163.26

Table 2.2 The effect of dithizone volume for zinc determination.

Volume of dithizone (mL)	Images of zinc(II)–dithizone complexes (mg L^{-1})	R-squared	Slope of Red value
0.5	 **0.2** **0.4** **0.8**	0.1579	46.56
1.0	 **0.2** **0.4** **0.8**	0.5446	116.78
1.25	 **0.2** **0.4** **0.8**	0.9998	179.40
1.5	 **0.2** **0.4** **0.8**	0.9705	65.12

Table 2.3 The effect of dithizone volume for lead determination.

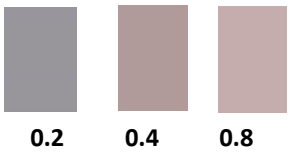
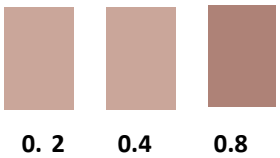
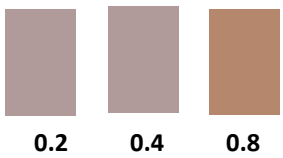
Volume of dithizone (mL)	Images of Lead(II)–dithizone complexes (mg L^{-1})	R-squared	Slope of Red value
0.5	 **0.2 0.4 0.8**	0.8233	181.15
1.0	 **0. 2 0.4 0.8**	0.6446	146.33
1.25	 **0.2 0.4 0.8**	0.5712	95.72
1.5	 **0.2 0.4 0.8**	0.5750	99.25

Table 2.4 The effect of dithizone volume for cadmium determination.

Volume of dithizone (mL)	Images of cadmium(II)–dithizone complexes (mg L^{-1})	R-squared	Slope of Red value
0.5	 **0.2 0.4 0.8**	0.6233	59.87
1.0	 **0.2 0.4 0.8**	0.7446	78.56
1.25	 **0.2 0.4 0.8**	0.7721	134.23
1.5	 **0.2 0.4 0.8**	0.9705	163.45

Table 3.1 The effect of buffer pH for copper determination.

Buffer (pH)	Images of copper(II)–dithizone complexes (mg L^{-1})	R-squared	Slope of Red value
2	 **0.2** **0.4** **0.8**	0.9933	173.19
3.5	 **0.2** **0.4** **0.8**	0.8634	37.77
4.5	 **0.2** **0.4** **0.8**	0.9126	46.62
5.5	 **0.2** **0.4** **0.8**	0.9811	50.74

Table 3.2 The effect of buffer pH for zinc determination.

Buffer (pH)	Images of zinc(II)–dithizone complexes (mg L^{-1})	R-squared	Slope of Red value
3.5	 **0.2** **0.4** **0.8**	0.8173	78.25
4.0	 **0.2** **0.4** **0.8**	0.9443	56.11
4.5	 **0.2** **0.4** **0.8**	0.9909	120.72
5	 **0.2** **0.4** **0.8**	0.9248	40.19

Table 3.3 The effect of buffer pH for cadmium determination.

Buffer (pH)	Images of cadmium(II)–dithizone complexes (mg L^{-1})	R-squared	Slope of Red value
3	 **0.2** **0.4** **0.8**	0.7335	79.23
4	 **0.2** **0.4** **0.8**	0.9406	60.01
5	 **0.2** **0.4** **0.8**	0.9812	291.45
5.5	 **0.2** **0.4** **0.8**	0.9450	126.86