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APPENDIX

CALCULATION OF THE EXPERIMENT

Calculation for amount of solids

Calculation of amount of solids was carried out by weighing the filter paper before filtration and after filtration which was dried at 105°C 2 hours and cool down to room temperature in the desiccator. The cycle of drying, cooling, desiccating, and weighing was repeated until a constant weight was obtained or until the weight change was less than 4% of the previous weight or 0.5 mg, and amount of solid in solutions were calculated.

$$\text{amount of solids (mg /100 ml solution)} = (A - B) \times 100$$

A = weight of filter paper after filtration (g)

B = weight of filter paper before filtration (g)

THE RESULT OF THE EXPERIMENT

The result of temperature effect

Table A1: Amount of solids (mg / 100 ml solution)

Temperature (°C)	#1	#2	#3	#4	#5	#6	Average	STDEV(δ)
25	0.42	0.41	0.43	0.49	0.42	0.43	0.43	0.03
50	5.85	5.91	6.1	5.87	5.81	6.00	5.92	0.11
80	10.51	10.54	10.65	10.55	10.34	10.51	10.52	0.11

Raw data: for experiment 6 tests (mg / 100 ml solution)

Temp. (°C)	# 1				# 2				# 3			
	before (g)	after (g)	diff. (g)	mg / 100 ml	before (g)	after (g)	diff. (g)	mg / 100 ml	before (g)	after (g)	diff. (g)	mg / 100 ml
25	0.1274	0.1316	0.0042	0.42	0.1250	0.1291	0.0041	0.41	0.1258	0.1301	0.0043	0.43
50	0.1250	0.1835	0.0585	5.85	0.1260	0.1851	0.0591	5.91	0.1224	0.1834	0.0610	6.10
80	0.1254	0.2305	0.1051	10.51	0.1256	0.2310	0.1054	10.54	0.1210	0.2275	0.1065	10.65

Temp. (°C)	# 4				# 5				# 6			
	before (g)	after (g)	diff. (g)	mg / 100 ml	Before (g)	after (g)	diff. (g)	mg / 100 ml	before (g)	after (g)	diff. (g)	mg / 100 ml
25	0.1258	0.1307	0.0049	0.49	0.1245	0.1287	0.0042	0.42	0.1237	0.1280	0.0043	0.43
50	0.1245	0.1832	0.0587	5.87	0.1234	0.1819	0.0585	5.85	0.1256	0.1866	0.0610	6.10
80	0.1256	0.2311	0.1055	10.55	0.1256	0.2290	0.1034	10.34	0.1211	0.2276	0.1065	10.65

The result of iron solution effect

Table A4: Raw data for experiment 5 tests

before washing with acid at 25°C (mg / 100 ml solution)

Conc. Fe (ppm)	# 1				# 2				# 3			
	before (g)	after (g)	diff. (g)	mg / 100 ml	before (g)	after (g)	diff. (g)	mg / 100 ml	before (g)	after (g)	diff. (g)	mg / 100 ml
0	0.1275	0.1317	0.0042	0.42	0.1254	0.1295	0.0041	0.41	0.1254	0.1297	0.0043	0.43
10	0.1520	0.1576	0.0056	0.56	0.1230	0.1285	0.0055	0.55	0.1264	0.1333	0.0068	0.61
50	0.1234	0.1364	0.0130	1.30	0.1145	0.1282	0.0137	1.37	0.1320	0.1455	0.0135	1.35
100	0.1341	0.1566	0.0225	2.25	0.1241	0.147	0.0229	2.29	0.1246	0.147	0.0224	2.24

Conc.Fe (ppm)	# 4				# 5			
	before (g)	after (g)	diff. (g)	mg / 100 ml	before (g)	after (g)	diff. (g)	mg / 100 ml
0	0.1241	0.1283	0.0042	0.42	0.1254	0.1296	0.0042	0.42
10	0.1253	0.1314	0.0061	0.61	0.1235	0.1296	0.0061	0.61
50	0.1158	0.1290	0.0132	1.32	0.1246	0.1378	0.0132	1.32
100	0.1264	0.1494	0.0230	2.30	0.1278	0.1508	0.0230	2.30

The result of iron solution effect

**Table A5: Raw data for experiment 5 tests
before washing with acid at 50°C**

conc. Fe	# 1				# 2				# 3			
(ppm)	before (g)	after (g)	diff. (g)	mg / 100 ml	before (g)	after (g)	diff. (g)	mg / 100 ml	before (g)	after (g)	diff. (g)	mg / 100 ml
0	0.1224	0.1809	0.0585	5.85	0.1256	0.1847	0.0591	5.91	0.1254	0.1864	0.0610	6.1
10	0.1254	0.1895	0.0641	6.41	0.1324	0.1976	0.0652	6.52	0.1278	0.8890	0.7612	6.11
50	0.1233	0.1878	0.0645	6.45	0.1158	0.1836	0.0678	6.78	0.1239	0.1876	0.0637	6.37
100	0.1156	0.1844	0.0688	6.88	0.1312	0.1957	0.0645	6.45	0.1294	0.1982	0.0688	6.88

conc. Fe	# 4				# 5			
(ppm)	before (g)	after (g)	diff. (g)	mg / 100 ml	before (g)	after (g)	diff. (g)	mg / 100 ml
0	0.1258	0.1845	0.0587	5.87	0.1147	0.1732	0.0585	5.85
10	0.1189	0.1823	0.0634	6.34	0.1159	0.1784	0.0625	6.25
50	0.1304	0.1982	0.0678	6.78	0.1245	0.1936	0.0691	6.91
100	0.1259	0.1948	0.0689	6.89	0.1494	0.2189	0.0695	6.95

The result of iron solution effect

**Table A6 : Raw data for experiment 5 tests
after washing with acid at 25°C**

conc. Fe	# 1				# 2				# 3			
(ppm)	before (g)	after (g)	diff. (g)	mg / 100 ml	before (g)	after (g)	diff. (g)	mg / 100 ml	before (g)	after (g)	diff. (g)	mg / 100 ml
0	0.1235	0.1275	0.0040	0.40	0.1356	0.1400	0.0044	0.44	0.1523	0.1565	0.0042	0.42
10	0.1245	0.1289	0.0044	0.44	0.1235	0.1282	0.0047	0.47	0.1287	0.1333	0.0046	0.46
50	0.1226	0.1270	0.0044	0.44	0.1159	0.1204	0.0045	0.45	0.1254	0.1300	0.0046	0.46
100	0.1258	0.1304	0.0046	0.46	0.1235	0.1277	0.0042	0.42	0.1259	0.1304	0.0045	0.45

conc. Fe	# 4				# 5			
(ppm)	before (g)	after (g)	diff. (g)	mg / 100 ml	before (g)	after (g)	diff. (g)	mg / 100 ml
0	0.1248	0.1293	0.0045	0.45	0.1259	0.1302	0.0043	0.43
10	0.1345	0.1385	0.0040	0.40	0.1235	0.1279	0.0044	0.44
50	0.1245	0.1290	0.0045	0.45	0.1148	0.1193	0.0045	0.45
100	0.1196	0.1242	0.0046	0.46	0.1245	0.129	0.0045	0.45

The result of iron solution effect

**Table A7: Raw data for experiment 5 tests
after washing with acid at 50°C**

conc. Fe	# 1				# 2				# 3			
(ppm)	before (g)	after (g)	diff. (g)	mg / 100 ml	before (g)	after (g)	diff. (g)	mg / 100 ml	before (g)	after (g)	diff. (g)	mg / 100 ml
0	0.1253	0.1834	0.0581	5.81	0.1256	0.1841	0.0585	5.85	0.1254	0.1864	0.0610	6.10
10	0.1245	0.1837	0.0592	5.92	0.1235	0.1833	0.0598	5.98	0.1235	0.1832	0.0597	5.97
50	0.1259	0.1854	0.0595	5.95	0.1145	0.1768	0.0623	6.23	0.1145	0.1735	0.0590	5.90
100	0.1123	0.1719	0.0596	5.96	0.1324	0.1919	0.0595	5.95	0.1236	0.1816	0.0580	5.80

conc. Fe	# 4				# 5			
(ppm)	before (g)	after (g)	diff. (g)	mg / 100 ml	before (g)	after (g)	diff. (g)	mg / 100 ml
0	0.1245	0.1838	0.0593	5.93	0.1241	0.1835	0.0594	5.94
10	0.1301	0.1913	0.0612	6.12	0.1125	0.1703	0.0578	5.78
50	0.1159	0.1729	0.0570	5.70	0.1236	0.1830	0.0594	5.94
100	0.1247	0.1857	0.0610	6.10	0.1159	0.1757	0.0598	5.98

BIOGRAPHY

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