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APPENDICES

Appendix A Ion Exchange Study

Table A1 Experimental data of ion exchange of Cu^{2+} and Na^{+} for ion exchange equilibrium study

Sample #	Zeolite mass (g)	Solition volume (ml)	C_0 (ppm)	C_0 (M)	C (ppm)	C (M)	C_0-C (ppm)	C_0-C(M)	As	Az
1	2	50	1600	0.0025	0	0	1600	0.0025	0	0.0573
2	2	50	3200	0.0503	2	0.0504	3197	0.0503	0.0054	0.1711
3	2	50	4000	0.0629	5	0.0629	3996	0.0629	0.0285	0.1950
4	2	50	4800	0.0755	83	0.0755	4771	0.0751	0.0513	0.2449
5	2	50	5599	0.0881	394	0.0881	5437	0.0856	0.0968	0.2072
6	2	50	6399	0.1007	1961	0.1007	5777	0.0909	0.1137	0.2542
7	2	50	7199	0.1133	1184	0.1133	6826	0.1074	0.1527	0.2916
8	2	50	7999	0.1258	2903	0.1259	7086	0.1115	0.2	0.3442
9	2	50	11999	0.1888	8076	0.1888	9595	0.1510	0.2555	0.3843
10	2	50	13999	0.2203	12403	0.2203	10294	0.1620	0.2642	0.3693
11	2	50	15998	0.2517	14902	0.2518	11543	0.1817	0.2781	0.4141
12	2	50	19998	0.3147	22354	0.3147	9794	0.1542	0.51	0.3514
13	0.5	50	7200	0.1133	4300	0.0067	4307	0.0676	0.5972	0.4159
14	0.5	50	14000	0.2203	9840	0.1548	4167	0.0654	0.7028	0.5966

Table A2 Experimental data of ion exchange of Ag^+ and Na^+ for ion exchange equilibrium study

Sample #	Zeolite mass (g)	Solition volume (ml)	C_0 (ppm)	C_0 (M)	C (ppm)	C (mM)	C_0-C (ppm)	C_0-C(M)	As	Az
1	2	50	800	0.0074	1	0.0093	799	0.0074	0.0009	0.0338
2	2	50	1600	0.0148	1	0.0093	1599	0.0148	0.0009	0.0676
3	2	50	2400	0.0222	4	0.0371	2396	0.0222	0.0025	0.1012
4	2	50	3200	0.0297	2	0.0185	3198	0.0296	0.0010	0.1351
5	2	50	4000	0.0371	1	0.0093	3999	0.0371	0.0005	0.1690
6	2	50	4800	0.0445	1	0.0093	4799	0.0445	0.0004	0.2028
7	2	50	5600	0.0519	1	0.0093	5599	0.0519	0.0003	0.2365
8	2	50	6400	0.0593	3	0.0278	6397	0.0593	0.0009	0.2703
9	2	50	7200	0.0667	3	0.0278	7197	0.0667	0.0007	0.3041
10	2	50	8000	0.0742	1	0.0093	7999	0.0742	0.0002	0.3379
11	2	50	12000	0.1112	11	0.1020	11989	0.1111	0.0015	0.5065
12	2	50	14000	0.1298	24	0.2225	13976	0.1296	0.0028	0.5905
13	2	50	16000	0.1483	30	0.2781	15970	0.1481	0.0032	0.6747
14	2	50	20000	0.1854	97	0.8992	19903	0.1845	0.0073	0.8409
15	1	50	12000	0.1112	464	4.3015	11536	0.1069	0.0387	0.9748
16	1	50	14000	0.1298	2400	22.249	11600	0.1075	0.1714	0.9802
17	1	50	16000	0.1483	4240	39.307	11760	0.1090	0.2650	0.9937
18	1	50	20000	0.1854	9120	84.547	10880	0.1009	0.4560	0.9193
19	0.5	50	12000	0.1112	6400	59.331	5600	0.0519	0.5333	0.9464
20	0.5	50	14000	0.1298	8640	80.097	5360	0.0497	0.6171	0.9058
21	0.5	50	16000	0.1483	11040	102.34	4960	0.0460	0.6900	0.8382
22	0.5	50	20000	0.1854	14400	133.49	5600	0.0519	0.7200	0.9464

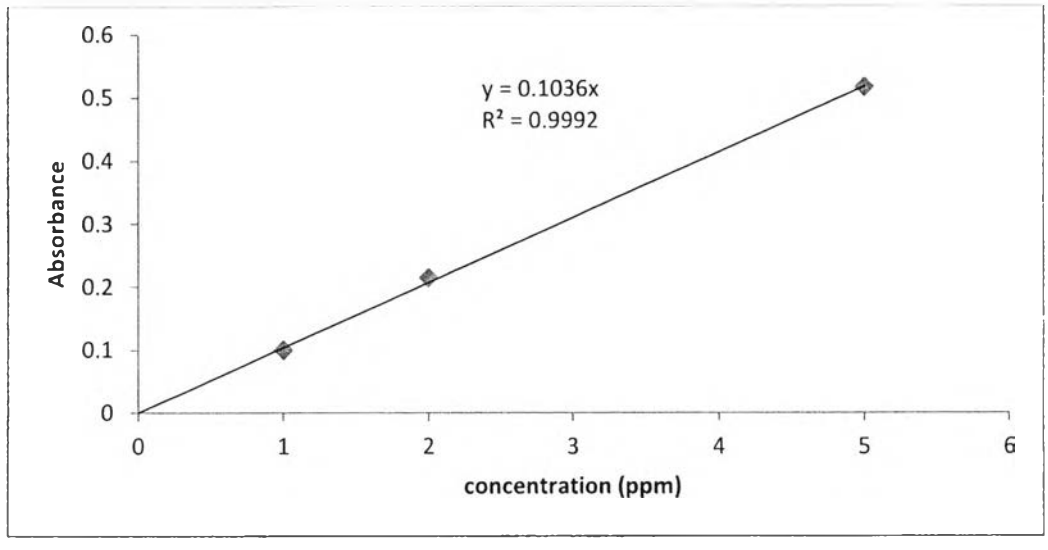

Figure A1 Calibration curve of Cu^{2+} solution for AA analysis.

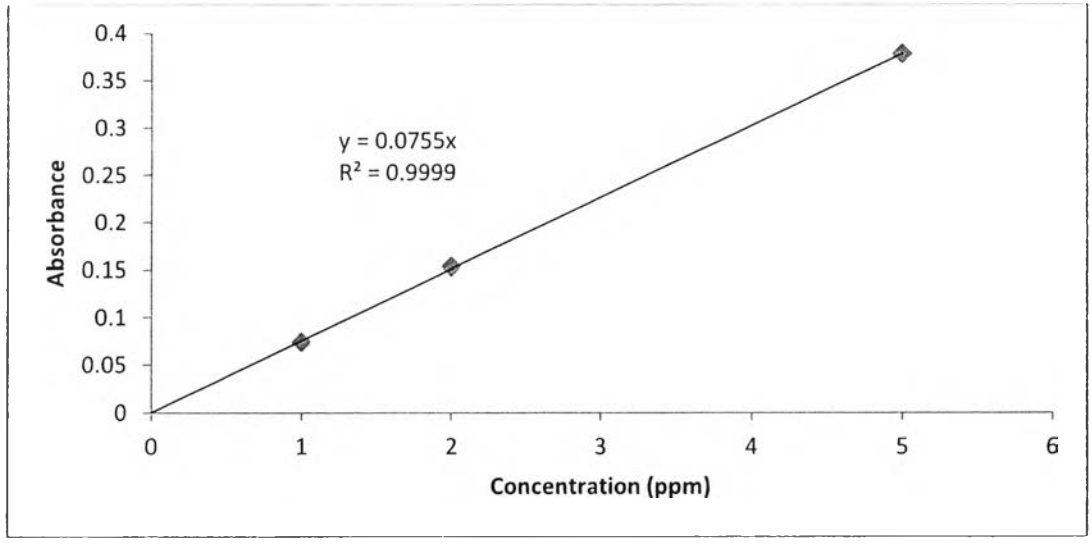

Figure A2 Calibration curve of Ag+ solution for AA analysis.

Appendix B XRF Analysis

Table B1 XRF analysis of zeolite at all ratio of Ag and Cu

Ratio of Ag:Cu	Concentration (%wt)				
	Na_2O	Al_2O_3	SiO_2	Ag_2O	CuO
Zeolite	15.365	47.579	16.247	-	-
0.1:1	5.567±0.099	40.603±0.929	16.489±0.499	1.690±0.153	18.424±1.197
0.5:1	4.075±0.358	40.575±1.252	17.529±0.491	4.278±0.724	17.611±1.366
1:1	1.515±0.064	38.989±4.767	17.799±4.459	10.350±0.980	16.827±0.211
1.5:1	0.779±0.119	39.773±0.963	16.743±0.525	13.413±1.370	13.918±0.161
2:1	0.492±0.014	38.828±1.747	17.201±1.066	17.254±2.366	11.670±0.459

Appendix C Master Batches Appearances

The master batches were compressed at pressure 150 kg/cm2 in the 10X5X0.5 cm mold.

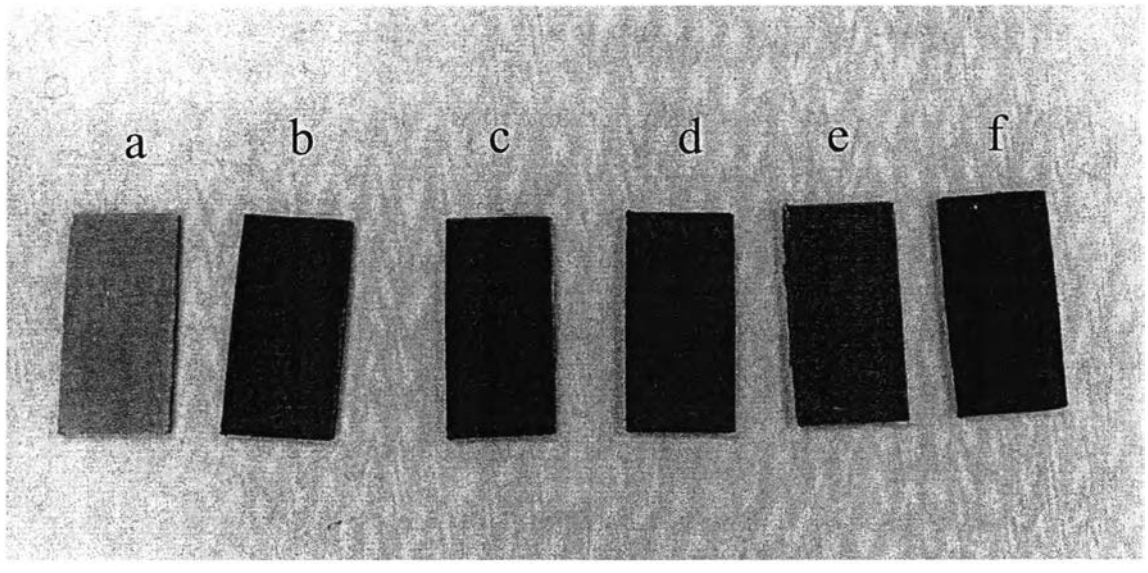

Figure C1 The compressed master batches a) LDPE+zeolite master batch b) LDPE+Ag:Cu = 2:1 master batch c) LDPE+Cu/zeolite-A master batch d) LDPE+ Ag:Cu = 0.5:1 master batch e) LDPE+Ag:Cu = 1:1 master batch and f) LDPE+ Ag/zeolite-A master batch

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Presentations:

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