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APPENDICES

Table A.1 Adsorption of 2-CP on the surface of TiO_2/O_2, TiO_2/N_2, $TiO_2/AC/N_2$, and AC/N_2 in 500C as calcination temperature.

Molar ratios of TiO_2/AC	2-CP adsorption on TiO_2/AC surface, mg 2-CP/ g TiO_2/AC			
Initial concentration (mg/L)	**TiO_2/O_2**	**TiO_2/N_2**	**$TiO_2/AC/N_2$**	**AC/N_2**
100	335	973	999	830
150	410	1,273	1,210	1,250
200	410	1,480	1,680	1,620
250	470	1,600	1,955	1,850
300	470	2,087	2,050	2,000

Table A.2 Photocatalytic oxidation of 2-CP in TiO_2/O_2 and TiO_2/N_2

Type of TiO_2/AC	Residual concentration of 2-CP, mg/L					
Time, min	TiO_2/O_2			TiO_2/N_2		
	1*	2*	3*	1*	2*	3*
-90	296.163	294.503	295.333	294.903	296.587	295.820
0	231.603	232.383	231.993	203.531	203.063	203.745
5	208.980	206.727	216.020	174.033	173.547	180.521
10	191.065	191.901	198.150	154.620	156.427	151.334
15	175.720	174.051	178.219	136.087	133.393	134.500
30	162.496	163.273	156.218	113.752	116.570	103.534
45	148.827	149.963	146.062	101.530	100.750	84.403
60	138.980	138.387	132.017	88.947	89.420	67.138
90	129.487	129.137	125.979	68.783	68.301	49.064
120	119.497	118.604	102.384	52.210	50.954	35.275
150	111.240	111.063	96.1517	43.277	42.062	24.895
180	101.620	103.193	84.073	40.843	40.0433	14.829

1* = The residual concentration of 2-CP in first determination
2* = The residual concentration of 2-CP in second determination
3* = The average of 2 determination and showed in this text

Table A.3 Photocatalytic oxidation of 2-CP in $TiO_2/AC/N_2$ and TiO_2/P-25

Type of TiO_2/AC	Residual concentration of 2-CP, mg/L					
Time, min	$TiO_2/AC/N_2$			TiO_2/P-25		
	1*	2*	3*	1*	2*	3*
-90	295.493	294.843	288.496	294.163	295.523	294.843
0	138.863	139.937	91.217	175.623	177.493	176.558
5	109.840	106.911	67.031	166.200	167.253	169.727
10	94.737	96.613	65.802	156.250	157.937	158.760
15	84.054	86.434	64.042	144.050	147.630	150.840
30	69.901	67.960	53.352	134.283	135.625	138.288
45	56.174	56.830	43.215	132.473	130.580	131.527
60	46.623	46.740	37.175	125.390	124.170	124.780
90	32.274	33.277	25.787	117.603	117.753	121.012
120	20.410	23.063	18.986	109.913	110.052	109.983
150	19.860	20.701	14.771	100.426	103.277	101.852
180	18.574	19.707	12.068	95.647	97.088	96.367

Table A.4 Adsorption of 2-CP on the surface of TiO_2/N_2 in different the calcination temperatures

Calcination temperature, °C	2-CP adsorption on TiO_2 surface, mg 2-CP/ g TiO_2			
Initial concentration, mg/L	**500**	**800**	**1100**	**1300**
100	440	420	340	330
150	520	550	420	450
200	640	650	540	580
250	710	750	600	680
300	820	860	700	790

Table A.5 Adsorption of 2-CP on the surface of $TiO_2/AC/N_2$ in different the calcination temperatures

Calcination temperature °C	**2-CP adsorption on TiO_2/AC surface, mg 2-CP/ g TiO_2/AC**			
Initial concentration, mg/L	**500**	**800**	**1100**	**1300**
100	600	610	540	480
150	850	790	740	690
200	990	970	930	860
250	1,200	1,080	1,140	1,090
300	1,300	1,300	1,350	1,250

Table A.6 Photocatalytic oxidation of 2-CP in different calcination temperatures of TiO_2/N_2

Calcination temperature °C	**Residual concentration of 2-CP, mg/L**								
Time, min	**500**			**800**			**1100**		
	1*	**2***	**3***	**1***	**2***	**3***	**1***	**2***	**3***
-90	295.053	296.587	295.820	295.726	297.493	296.610	297.087	299.937	298.512
0	204.426	203.064	203.745	199.153	196.658	197.906	198.830	197.497	198.163
5	167.495	166.880	167.188	174.226	174.543	174.385	184.572	183.827	184.199
10	142.575	140.093	141.334	155.717	153.170	154.443	169.804	169.290	169.547
15	128.940	126.727	127.834	133.83	136.510	135.174	157.981	157.507	157.744
30	100.498	103.237	101.867	115.728	116.617	116.173	135.453	134.280	134.867
45	84.723	84.083	84.403	101.621	100.097	100.859	119.420	118.290	118.855
60	68.190	66.087	67.138	84.487	85.548	85.018	101.737	100.310	101.023
90	49.828	48.301	49.064	67.080	67.873	67.477	84.493	85.493	84.993
120	36.264	34.287	35.275	53.471	56.213	54.842	72.281	71.180	71.730
150	24.395	25.395	24.895	41.197	43.194	42.196	59.425	59.530	59.477
180	15.614	14.043	14.829	31.050	31.870	31.460	48.050	47.097	47.573

Table A.7 Adsorption of 2-CP on the surface of AC/N_2 in different the calcination temperatures

Calcination temperature °C	**2-CP adsorption on AC surface, mg 2-CP/ g AC**			
Initial concentration, mg/L	**500**	**800**	**1100**	**1300**
100	680	700	660	690
150	990	960	900	960
200	1,200	1,280	1,200	1,160
250	1,460	1,470	1,540	1,410
300	1,750	1,800	1,750	1,600

Table A.8 Photocatalytic oxidation of 2-CP in different calcination temperatures of $TiO_2/AC/N_2$

Calcination temperature °C	**Residual concentration of 2-CP, mg/L**								
Time, min	**500**			**800**			**1100**		
	1*	**2***	**3***	**1***	**2***	**3***	**1***	**2***	**3***
-90	295.820	294.854	295.337	293.490	296.420	294.957	296.477	297.346	296.917
0	133.743	130.937	132.340	146.837	147.193	147.015	137.530	137.017	137.274
5	116.395	114.213	115.304	125.397	123.287	124.342	123.820	123.276	123.548
10	100.187	102.755	101.471	115.053	115.429	115.241	117.018	119. 806	118.412
15	84.195	84.760	84.477	100.000	103.290	101.900	110.613	109.803	110.208
30	67.736	69.487	68.612	88.831	88.217	88.524	95.429	94.811	95.119
45	55.497	56.520	56.008	78.745	78.197	78.471	83.783	83.947	83.865
60	44.753	44.840	44.797	68.486	66.810	67.648	74.427	75.958	75.192
90	34.342	34.088	34.215	52.157	50.093	51.125	58.308	56.755	57.531
120	22.051	23.153	22.602	37.437	38.844	38.140	45.280	46.747	46.013
150	15.433	14.384	14.908	27.817	27.083	27.450	38.219	36.624	37.422
180	11.087	10.717	10.907	26.076	26.52333	26.300	34.198	35.266	34.732

Table A.9 Photocatalytic oxidation of 2-CP in different calcination temperatures of $TiO_2/AC/N_2$ and $TiO_2/AC/N_2$ in 1300 mg/L

Calcination temperature °C	Residual concentration of 2-CP, mg/L					
Time, min	TiO_2/N_2			$TiO_2/AC/N_2$		
	1*	2*	3*	1*	2*	3*
-90	293.903	294.253	295.367	294.163	296.570	294.078
0	209.277	208.280	134.752	135.3233	134.180	208.778
5	184.497	183.270	127.753	128.0563	127.449	183.883
10	167.180	170.089	117.382	117.3853	117.378	168.635
15	154.526	154.954	112.355	111.42	113.290	154.740
30	146.351	146.537	98.278	99.061	97.495	139.944
45	132.190	130.520	87.797	88.06333	87.530	128.022
60	116.413	113.844	78.741	78.0953	79.387	111.795
90	98.827	99.953	64.670	64.39333	64.947	94.390
120	84.503	86.620	52.044	53.26	50.829	80.562
150	72.287	70.843	45.498	46.14	44.857	71.565
180	65.721	64.532	43.068	43.05333	43.083	65.126

BIOGRAPHY

Miss.Nalinee Wanmakok was born on November 7, 1981 in Chiangrai, Thailand. She attended Chulaborn's College Chiangrai school and graduated in 1999. She received her Bachelor's degree in Environmental Science from faculty of Environment and Resource Studies, Mahidol University (MU) in 2004. At MU, she has studied in topic of "The Study of Efficiency of BOD by using Effective Microorganisms (EM)"

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