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APPENDICES

APPENDIX A

Results from cyclic voltammetric technique

Table A Specific capacitance from cyclic voltammetry

Electrode Material	Specific Capacitance (F/g)			Average Capacitance (F/g)
	1	2	3	
- Refluxed MWNTs with 6 hours	57.42	58.65	57.84	57.97
- Refluxed MWNTs with 12 hours	70.34	69.42	69.63	69.76
- Refluxed MWNTs with 18 hours	81.67	83.34	82.65	82.55
- 2 % w/w TiO_2/MWNTs	144.31	145.05	144.01	144.45
- 4 % w/w TiO_2/MWNTs	155.34	156.06	155.86	155.75
- 6 % w/w TiO_2/MWNTs	172.08	174.61	173.90	173.53
- 8 % w/w TiO_2/MWNTs	176.55	177.00	176.13	176.56
- 10 % w/w TiO_2/MWNTs	178.65	177.74	178.07	178.15
- 2 % w/w FeO/MWNTs	101.56	100.49	101.61	101.22
- 4 % w/w FeO/MWNTs	103.53	103.67	102.98	103.39
- 6 % w/w FeO/MWNTs	104.46	104.92	104.66	104.68
- 8 % w/w FeO/MWNTs	104.92	105.02	105.23	105.05
- 10 % w/w FeO/MWNTs	106.01	105.65	105.61	105.75
- 2 % w/w NiO/MWNTs	146.56	147.23	146.90	146.89
- 4 % w/w NiO/MWNTs	151.65	152.23	152.67	152.18
- 6 % w/w NiO/MWNTs	158.96	157.76	157.48	158.06
- 8 % w/w NiO/MWNTs	168.93	169.11	168.73	168.92
- 10 % w/w NiO/MWNTs	172.56	171.31	171.86	171.91

Electrode Material	Specific Capacitance (F/g)			Average Capacitance (F/g)
	1	2	3	
- 2 : 8 % w/w FeO-TiO_2/MWNTs	123.88	124.54	124.03	124.15
- 4 : 6 % w/w FeO-TiO_2/MWNTs	123.44	124.31	123.46	123.78
- 6 : 4 % w/w FeO-TiO_2/MWNTs	122.56	122.43	123.77	122.92
- 8 : 2 % w/w FeO-TiO_2/MWNTs	121.67	121.52	122.06	121.75
- 2 : 8 % w/w NiO-TiO_2/MWNTs	179.08	180.88	179.21	179.72
- 4 : 6 % w/w NiO-TiO_2/MWNTs	180.67	180.84	181.77	181.09
- 6 : 4 % w/w NiO-TiO_2/MWNTs	179.56	180.49	180.66	180.23
- 8 : 2 % w/w NiO-TiO_2/MWNTs	180.42	179.34	180.43	180.06

APPENDIX B

Results from electrochemical impedance spectroscopic technique

Table B Specific capacitance from impedance spectroscopy

Electrode Material	Specific Capacitance (F/g)			Average Capacitance (F/g)
	1	2	3	
- Refluxed MWNTs with 6 hours	55.63	55.34	55.78	55.58
- Refluxed MWNTs with 12 hours	67.90	66.43	66.55	66.96
- Refluxed MWNTs with 18 hours	79.42	80.47	80.06	79.98
- 2 % w/w TiO_2/MWNTs	139.33	140.51	140.99	140.27
- 4 % w/w TiO_2/MWNTs	150.37	150.58	149.57	150.17
- 6 % w/w TiO_2/MWNTs	170.03	171.07	171.60	170.90
- 8 % w/w TiO_2/MWNTs	176.48	175.08	175.32	175.62
- 10 % w/w TiO_2/MWNTs	176.89	176.83	177.68	177.13
- 2 % w/w FeO/MWNTs	98.56	99.09	99.80	99.15
- 4 % w/w FeO/MWNTs	102.67	103.56	102.21	102.81
- 6 % w/w FeO/MWNTs	104.24	103.39	103.18	103.60
- 8 % w/w FeO/MWNTs	104.46	104.55	105.00	104.67
- 10 % w/w FeO/MWNTs	105.44	104.63	105.03	105.03
- 2 % w/w NiO/MWNTs	144.62	145.34	144.25	144.73
- 4 % w/w NiO/MWNTs	150.04	149.66	149.68	149.97
- 6 % w/w NiO/MWNTs	154.51	155.47	155.62	155.20
- 8 % w/w NiO/MWNTs	167.30	166.93	166.31	166.84
- 10 % w/w NiO/MWNTs	170.22	169.78	170.05	170.01

Electrode Material	Specific Capacitance (F/g)			Average Capacitance (F/g)
	1	2	3	
- 2 : 8 % w/w FeO-TiO_2/MWNTs	123.09	122.52	122.21	122.60
- 4 : 6 % w/w FeO-TiO_2/MWNTs	122.47	121.68	122.04	122.06
- 6 : 4 % w/w FeO-TiO_2/MWNTs	121.42	121.49	121.66	121.52
- 8 : 2 % w/w FeO-TiO_2/MWNTs	121.34	120.08	120.51	120.64
- 2 : 8 % w/w NiO-TiO_2/MWNTs	177.45	177.49	177.03	177.32
- 4 : 6 % w/w NiO-TiO_2/MWNTs	180.42	180.03	179.01	179.82
- 6 : 4 % w/w NiO-TiO_2/MWNTs	179.54	179.22	179.06	179.27
- 8 : 2 % w/w NiO-TiO_2/MWNTs	179.00	178.07	178.15	178.40

APPENDIX C

Results from galvanostatic charge-discharge technique

Table C Specific capacitance from galvanostatic charge-discharge

Electrode Material	Specific Capacitance (F/g)			Average Capacitance (F/g)
	1	2	3	
- Refluxed MWNTs with 6 hours	53.38	54.04	53.17	55.53
- Refluxed MWNTs with 12 hours	66.42	67.74	67.09	67.08
- Refluxed MWNTs with 18 hours	80.78	81.53	80.99	81.10
- 2 % w/w TiO_2/MWNTs	141.75	140.03	140.04	140.60
- 4 % w/w TiO_2/MWNTs	149.95	149.92	149.81	149.89
- 6 % w/w TiO_2/MWNTs	172.56	170.08	170.70	171.11
- 8 % w/w TiO_2/MWNTs	175.63	175.33	176.02	175.66
- 10 % w/w TiO_2/MWNTs	177.80	176.07	176.19	176.68
- 2 % w/w FeO/MWNTs	97.46	97.57	99.84	98.29
- 4 % w/w FeO/MWNTs	103.74	102.51	102.94	103.06
- 6 % w/w FeO/MWNTs	103.85	103.61	103.00	103.48
- 8 % w/w FeO/MWNTs	104.26	104.39	104.88	104.51
- 10 % w/w FeO/MWNTs	105.19	104.95	105.01	105.05
- 2 % w/w NiO/MWNTs	143.69	144.84	143.09	143.87
- 4 % w/w NiO/MWNTs	150.65	149.16	149.01	149.60
- 6 % w/w NiO/MWNTs	154.51	155.49	155.04	155.01
- 8 % w/w NiO/MWNTs	166.86	167.06	167.91	167.27
- 10 % w/w NiO/MWNTs	170.08	170.65	170.55	170.42

Electrode Material	Specific Capacitance (F/g)			Average Capacitance (F/g)
	1	2	3	
- 2 : 8 % w/w FeO-TiO_2/MWNTs	122.37	122.18	122.32	122.29
- 4 : 6 % w/w FeO-TiO_2/MWNTs	122.06	122.14	122.04	122.08
- 6 : 4 % w/w FeO-TiO_2/MWNTs	121.55	120.01	121.48	121.01
- 8 : 2 % w/w FeO-TiO_2/MWNTs	120.35	119.76	120.02	120.04
- 2 : 8 % w/w NiO-TiO_2/MWNTs	175.63	177.52	177.92	177.02
- 4 : 6 % w/w NiO-TiO_2/MWNTs	180.88	180.69	179.33	180.30
- 6 : 4 % w/w NiO-TiO_2/MWNTs	179.47	179.09	179.56	179.37
- 8 : 2 % w/w NiO-TiO_2/MWNTs	175.76	178.46	178.48	177.56

APPENDIX D

Results from three electrochemical techniques

Table D Specific capacitance from three electrochemical techniques

Electrode Material	Specific Capacitance (F/g)			Average Capacitance (F/g)
	CV	EIS	Galvano static	
- Refluxed MWNTs with 6 hours	57.97	55.58	55.53	56.36
- Refluxed MWNTs with 12 hours	69.76	66.96	67.08	67.93
- Refluxed MWNTs with 18 hours	82.55	79.98	81.10	81.21
- 2 % w/w TiO_2/MWNTs	144.45	140.27	140.60	141.77
- 4 % w/w TiO_2/MWNTs	155.75	150.17	149.89	151.93
- 6 % w/w TiO_2/MWNTs	173.53	170.90	171.11	171.84
- 8 % w/w TiO_2/MWNTs	176.56	175.62	175.66	175.94
- 10 % w/w TiO_2/MWNTs	178.15	177.13	176.68	177.32
- 2 % w/w FeO/MWNTs	101.22	99.15	98.29	99.55
- 4 % w/w FeO/MWNTs	103.39	102.81	103.06	103.08
- 6 % w/w FeO/MWNTs	104.68	103.60	103.48	103.92
- 8 % w/w FeO/MWNTs	105.05	104.67	104.51	104.74
- 10 % w/w FeO/MWNTs	105.75	105.03	105.05	105.27
- 2 % w/w NiO/MWNTs	146.89	144.73	143.87	145.16
- 4 % w/w NiO/MWNTs	152.18	149.97	149.60	150.52
- 6 % w/w NiO/MWNTs	158.06	155.20	155.01	156.09
- 8 % w/w NiO/MWNTs	168.92	166.84	167.27	167.67
- 10 % w/w NiO/MWNTs	171.91	170.01	170.42	170.78

Electrode Material	Specific Capacitance (F/g)			Average Capacitance (F/g)
	CV	EIS	Galvano static	
- 2 : 8 % w/w FeO-TiO_2/MWNTs	124.15	122.60	122.29	123.01
- 4 : 6 % w/w FeO-TiO_2/MWNTs	123.78	122.06	122.08	122.64
- 6 : 4 % w/w FeO-TiO_2/MWNTs	122.92	121.52	121.01	121.81
- 8 : 2 % w/w FeO-TiO_2/MWNTs	121.75	120.64	120.04	120.81
- 2 : 8 % w/w NiO-TiO_2/MWNTs	179.72	177.32	177.02	178.02
- 4 : 6 % w/w NiO-TiO_2/MWNTs	181.09	179.82	180.30	180.40
- 6 : 4 % w/w NiO-TiO_2/MWNTs	180.23	179.27	179.37	179.62
- 8 : 2 % w/w NiO-TiO_2/MWNTs	180.06	178.40	177.56	178.67

VITA

Mr. Narabhandhu Laohawich was born on March 26, 1984 in Nonthaburi, Thailand. He received his Bachelor's degree of Engineering (Chemical Engineering) from Srinakharinwirot University in 2006.

Since 2006, he has become a graduate student of Program in Petrochemistry and Polymer Science, Faculty of Science, Chulalongkorn University and worked under the supervision of Associate Professor Dr. Orawon Chailapakul. Then in 2008, he received the scholarship from Chulalongkorn University Graduate School Thesis Grant. He graduated the Master of Science degree from Chulalongkorn University in the academic year 2008.

His present address is 25/560 Changwatthana Road, Bangtalard, Pakkred, Nonthaburi, Thailand 11120, Tel. 02-5840874, 086-5108382.