APPENDICES

APPENDIX A

Detail of reactor design

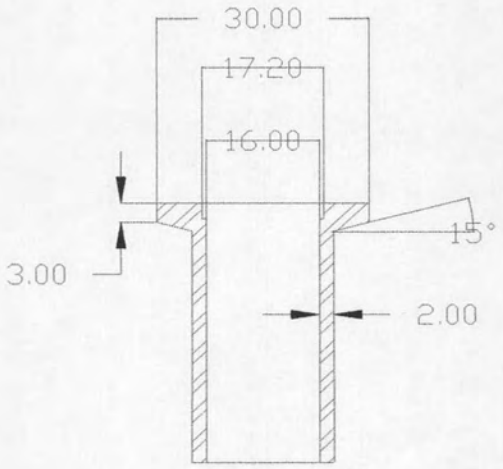

Figure A.1 Dimension of standard NW 16 flange

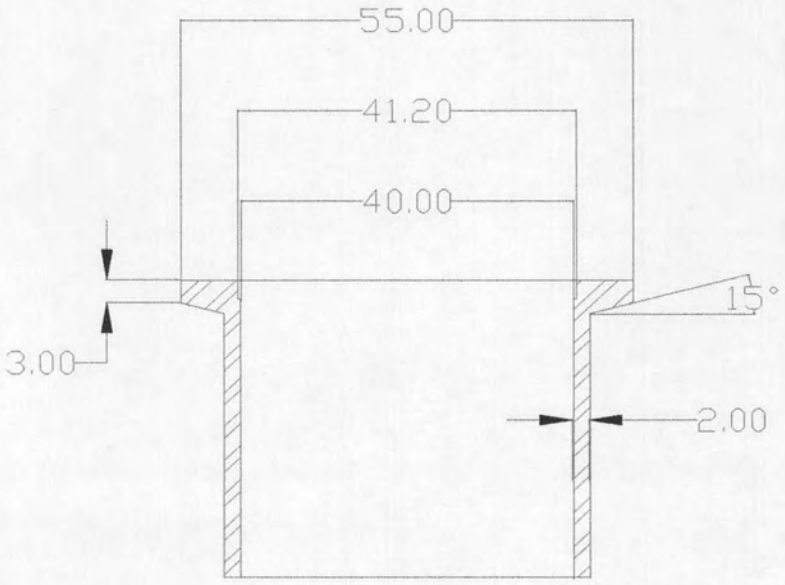

Figure A.2 Dimension of standard NW 40 flange

APPENDIX B

Attenuated Total Reflection Fourier Transform Infrared (ATR-FT-IR) of Samples

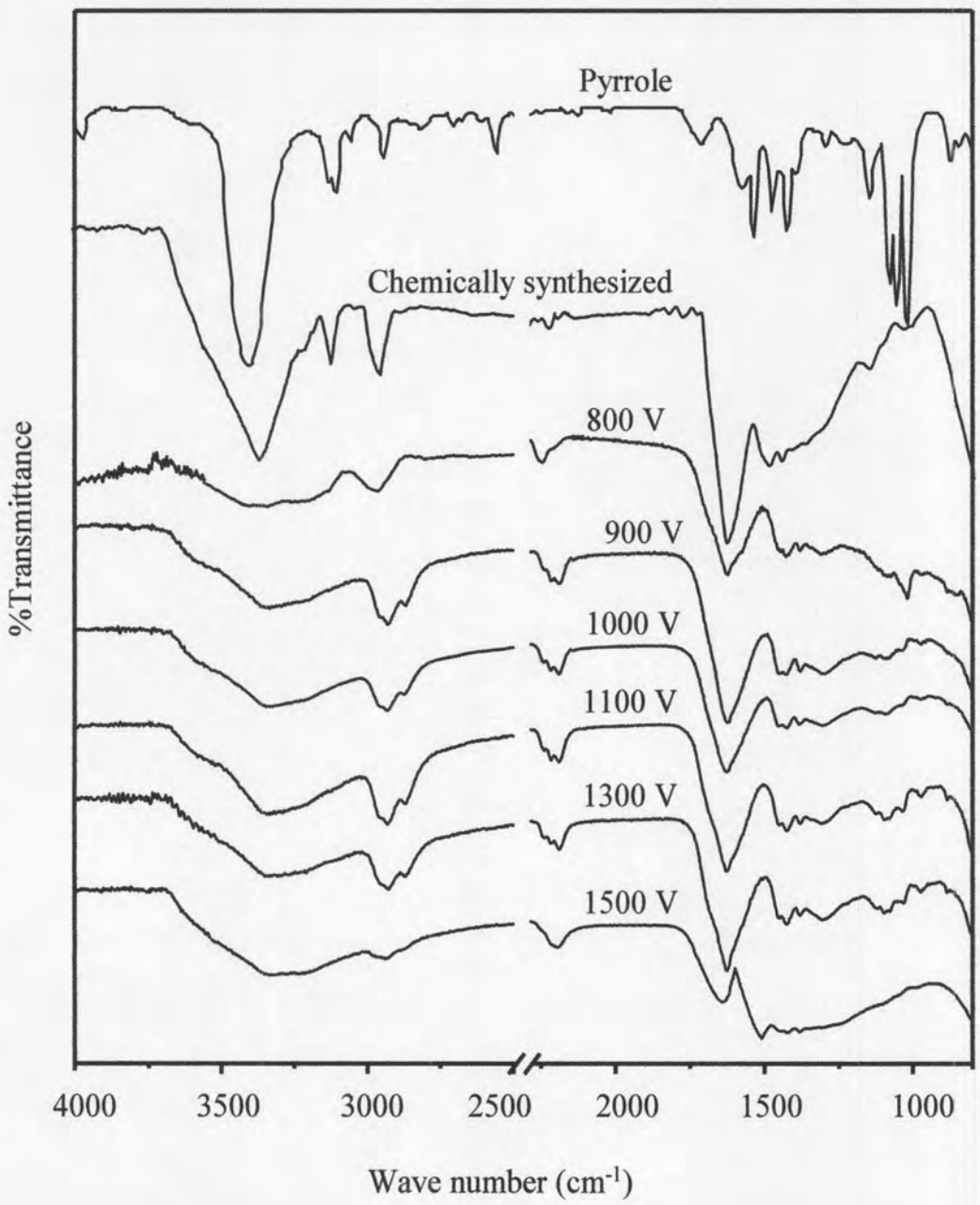

Figure B.1 FTIR spectrum of liquid pyrrole, and ATR-FTIR spectra of chemically-synthesized, and plasma-polymerized polypyrrole at different AC voltages at 60 minute reaction time.

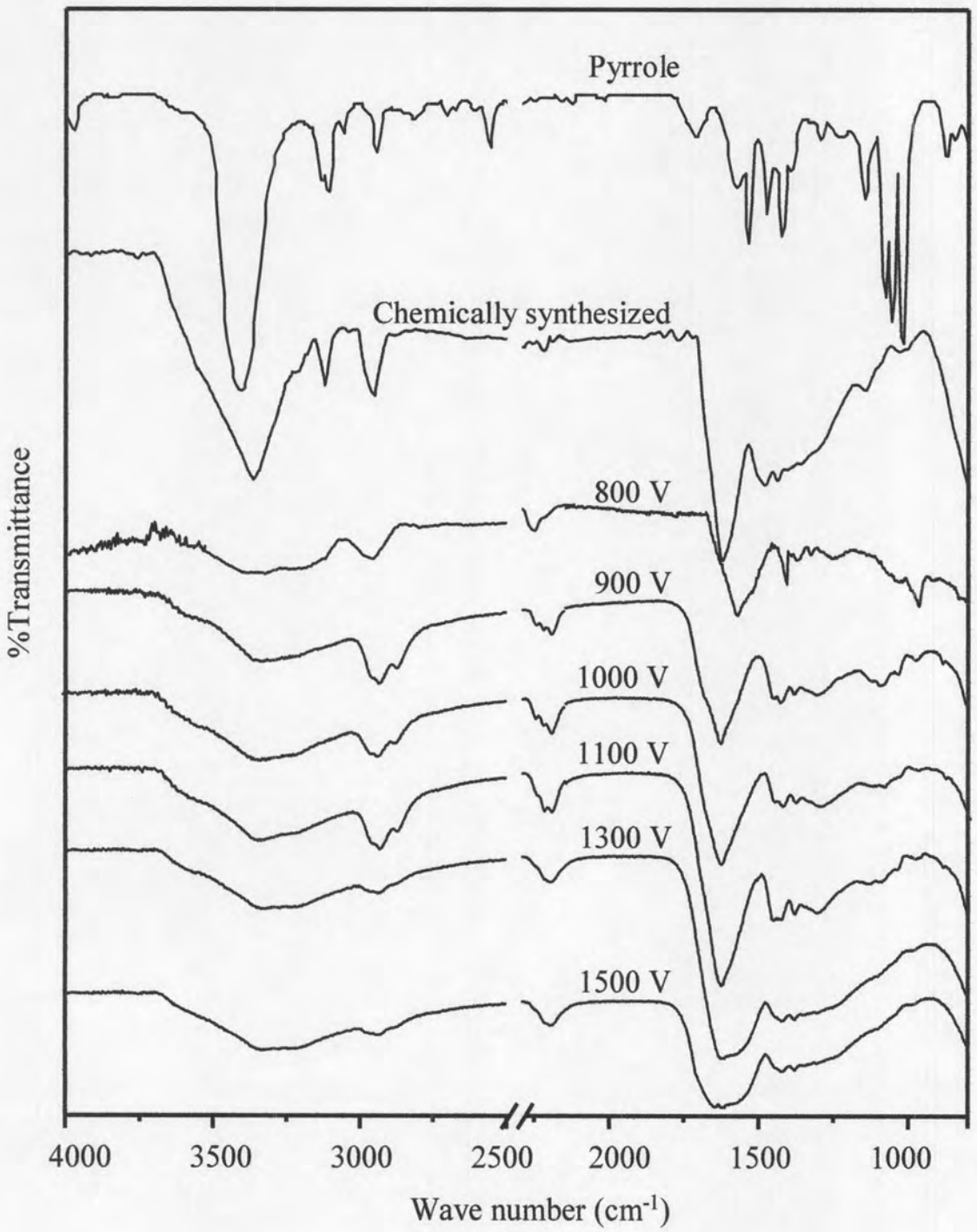

Figure B.2 FTIR spectrum of liquid pyrrole, and ATR-FTIR spectra of chemically-synthesized, and plasma-polymerized polypyrrole at different AC voltages at 90 minute reaction time.

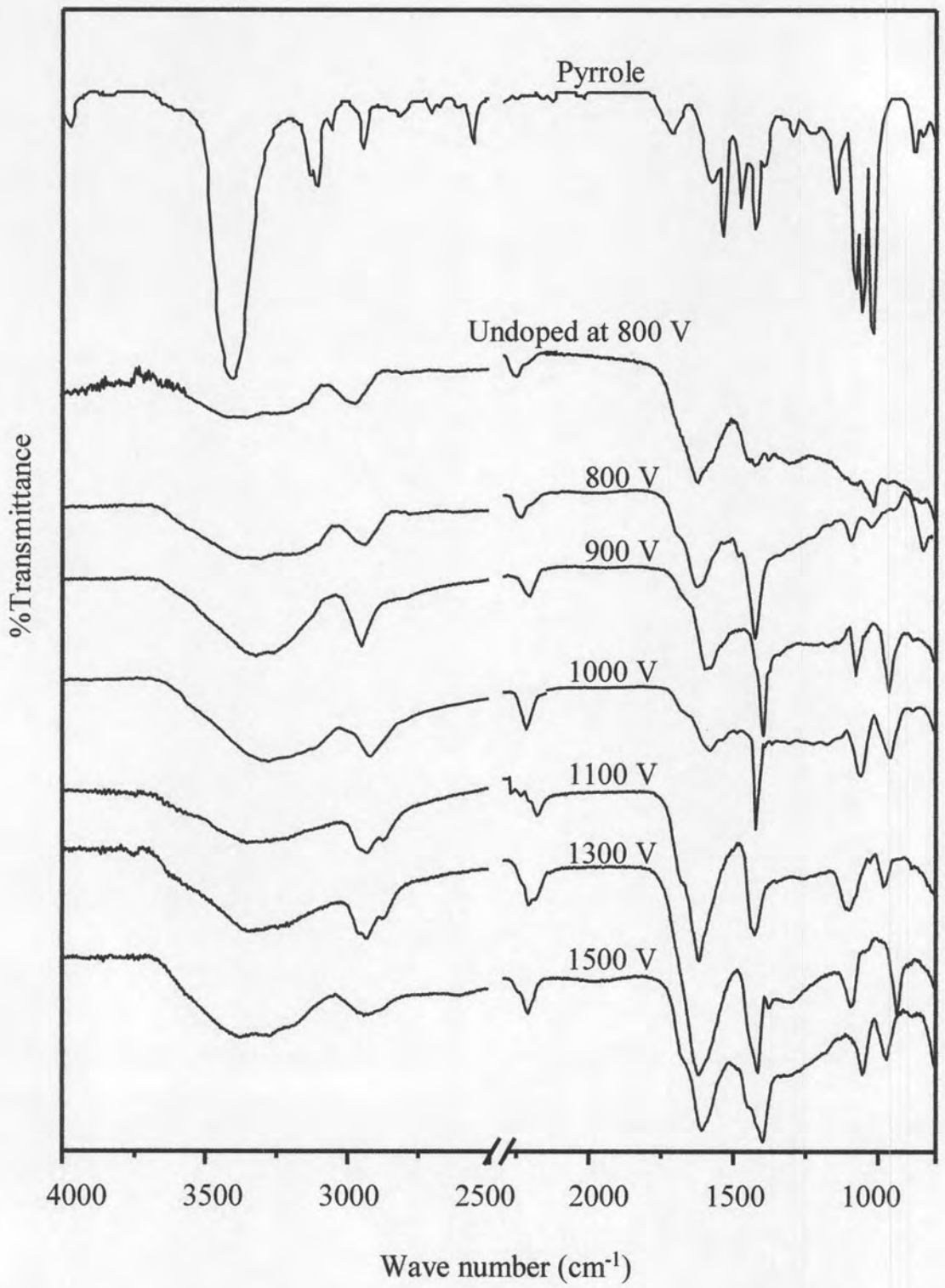

Figure B.3 FTIR spectrum of liquid pyrrole, and ATR-FTIR spectra of undoped at 800 V for 60 minute and *in situ* iodine-doped plasma-polymerized polypyrrole at different AC voltages at 60 minute reaction time.

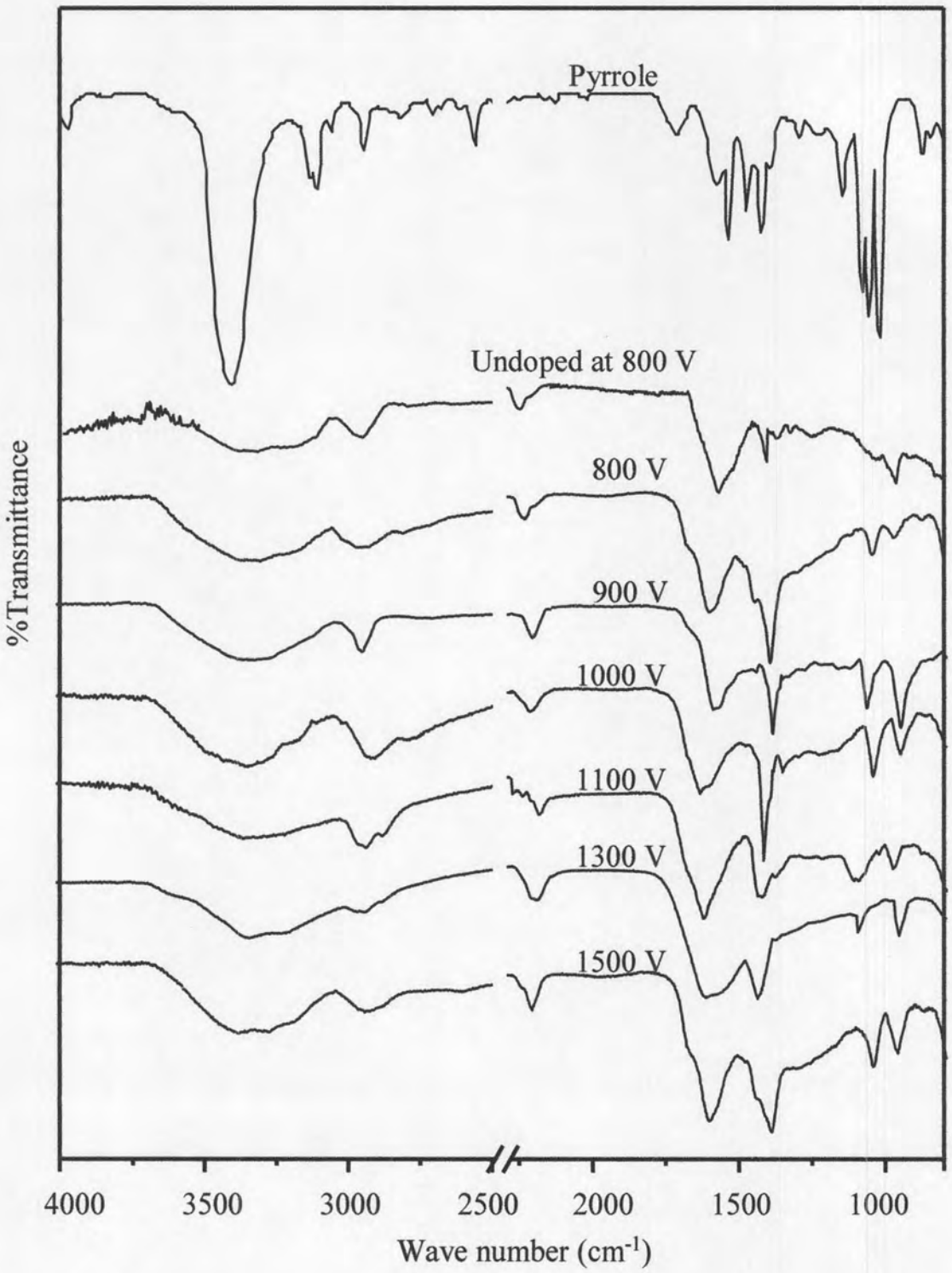

Figure B.4 FTIR spectrum of liquid pyrrole, and ATR-FTIR spectra of undoped at 800 V for 90 minute and *in situ* iodine-doped plasma-polymerized polypyrrole at different AC voltages at 90 minute reaction time.

APPENDIX C

Elemental composition of samples determined by Energy-Dispersive X-Ray Spectroscopy (EDS)

Table C.1 The elemental composition of plasma-polymerized polypyrrole.

Condition		Carbon	Nitrogen	Oxygen		
Time (min)	Voltage (V)	content (%)	content (%)	content (%)	C/N	O/N
30	800	60.99	15.10	23.91	4.04	1.58
	900	58.70	13.30	27.97	4.41	2.10
	1000	61.50	14.43	24.07	4.26	1.67
	1100	66.15	12.21	21.65	5.42	1.77
	1300	61.95	15.24	22.32	4.06	1.42
	1500	61.07	15.20	23.74	4.02	1.56
60	800	54.28	12.56	33.15	4.32	2.64
	900	67.59	14.47	17.94	4.67	1.24
	1000	62.46	12.49	25.05	5.00	2.00
	1100	66.68	12.90	20.42	5.17	1.58
	1300	68.43	11.98	19.59	5.71	1.63
	1500	59.58	10.82	29.46	5.52	2.72
90	800	62.23	12.92	24.85	4.82	1.92
	900	66.97	13.64	19.38	4.91	1.42
	1000	64.34	11.45	24.21	5.62	2.11
	1100	71.32	12.12	16.56	5.88	1.37
	1300	64.82	14.56	20.62	4.45	1.42
	1500	66.95	13.93	19.12	4.78	1.37

Data was obtained using an OXFORD, INCAX-sight 7573 spectrometer.

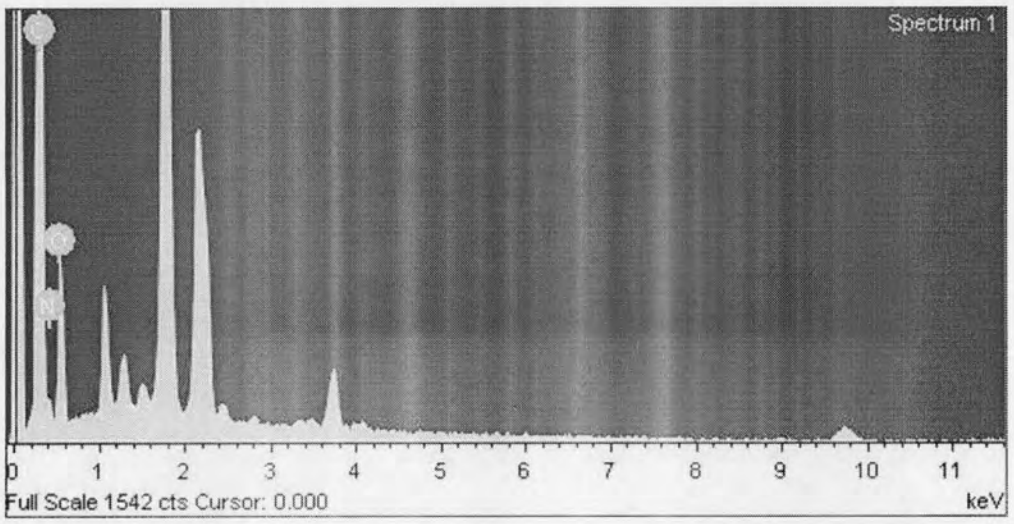

Figure C.1 EDS spectrum of plasma-polymerized polypyrrole at 1000 V at 30 minute reaction time.

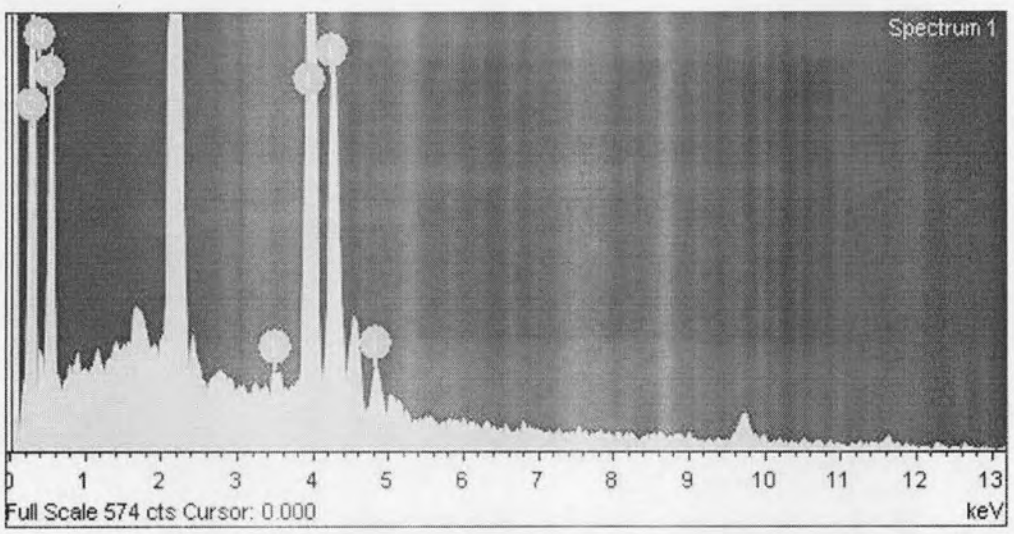

Figure C.2 EDS spectrum of *in situ* iodine-doped plasma-polymerized polypyrrole at 1000 V at 30 minute reaction time.

Table C.2 The elemental composition of *in situ* iodine-doped plasma-polymerized polypyrrole.

Condition		Carbon	Nitrogen	Oxygen	Iodine			
Time (min)	Voltage (V)	content (%)	content (%)	content (%)	content (%)	C/N	O/N	I/N
30	800	50.44	8.17	19.17	22.22	6.17	2.35	2.72
	900	56.88	8.31	19.68	15.13	6.84	2.37	1.82
	1000	53.89	7.63	19.05	19.44	7.06	2.56	2.93
	1100	55.05	8.65	18.63	17.67	5.78	2.16	1.27
	1300	57.32	7.86	23.94	10.88	7.29	3.04	1.38
	1500	68.45	12.18	16.23	3.14	5.46	1.33	0.26
60	800	51.38	6.87	21.53	20.22	7.48	3.13	2.72
	900	55.85	8.10	18.23	17.82	6.89	2.25	2.20
	1000	52.65	6.62	20.28	20.46	7.95	3.06	3.09
	1100	56.60	9.79	21.15	12.46	6.36	2.15	2.04
	1300	57.14	9.13	23.49	10.25	6.26	2.57	1.12
	1500	66.92	9.90	17.59	5.59	6.76	1.78	0.96
90	800	52.87	7.70	16.36	23.07	6.87	2.12	3.00
	900	51.05	7.08	19.30	22.57	7.20	2.72	3.19
	1000	58.88	7.17	15.93	18.02	8.21	2.22	2.51
	1100	55.14	9.02	20.79	15.06	6.11	2.30	1.67
	1300	53.24	10.15	24.15	11.96	5.24	2.43	1.18
	1500	58.55	10.01	18.57	12.87	5.85	1.865	1.29

Data was obtained using an OXFORD, INCAX-sight 7573 spectrometer.

APPENDIX D

Scanning Electron Microscope (SEM) of Samples

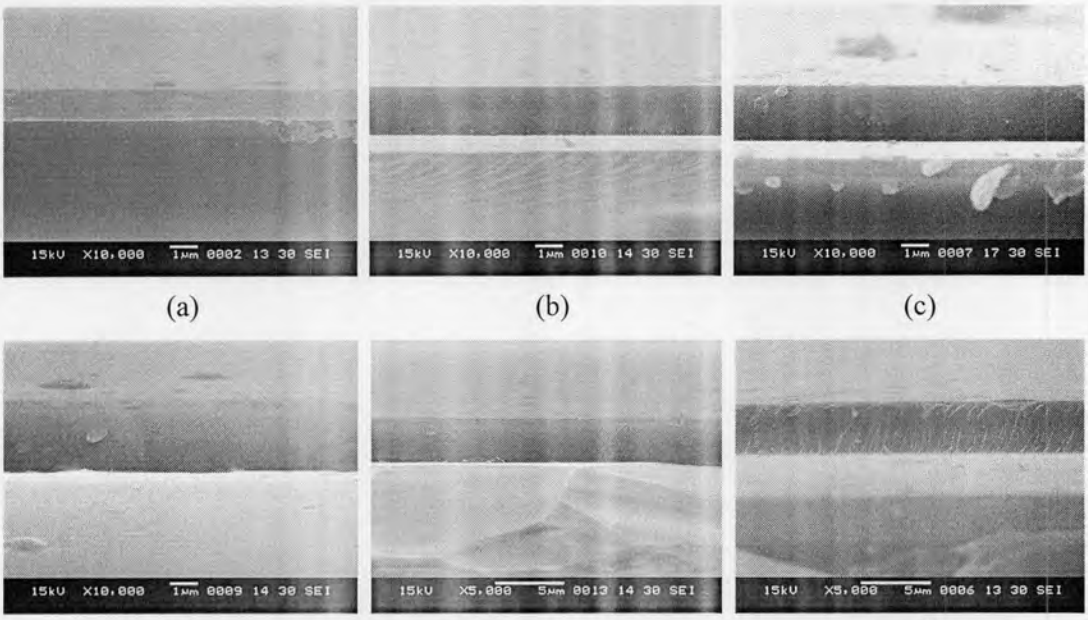

Figure D.1 Cross-sectional analysis of plasma-polymerized polypyrrole films on the glass substrate determined by scanning electron microscopic technique at 60 minute and various voltages; (a) 800 V, (b) 900 V, (c) 1000 V, (d) 1100 V, (e) 1300 V, and (f) 1500 V.

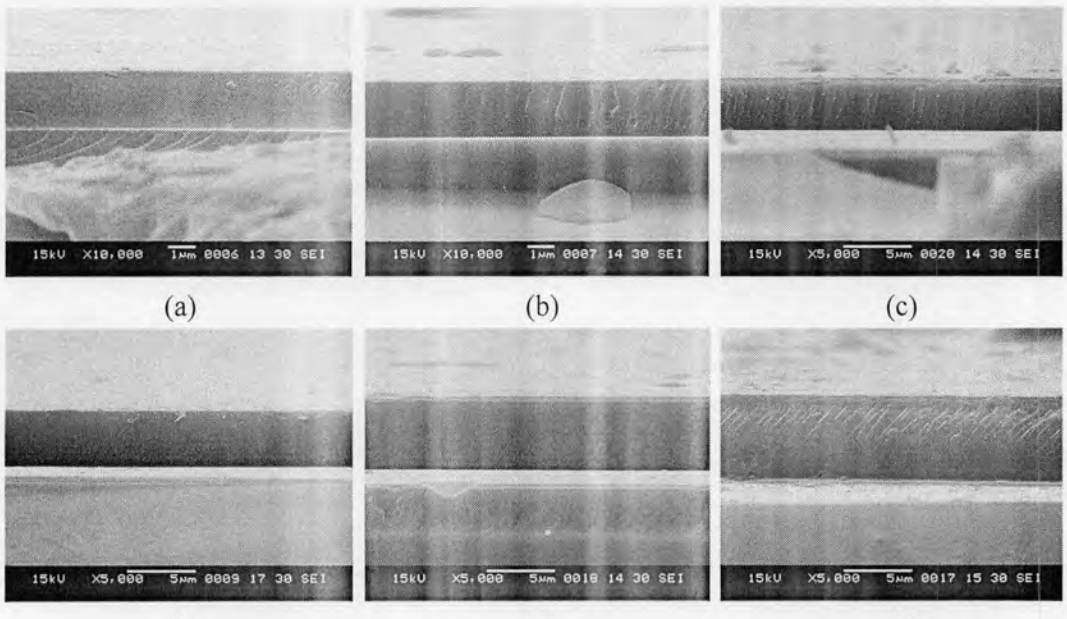

Figure D.2 Cross-sectional analysis of plasma-polymerized polypyrrole films on the glass substrate determined by scanning electron microscopic technique at 90 minute and various voltages; (a) 800 V, (b) 900 V, (c) 1000 V, (d) 1100 V, (e) 1300 V, and (f) 1500 V.

APPENDIX E

Electrical Conductivity of Samples

Table E.1 Electrical conductivity of AC plasma-polymerized polypyrrole

Condition		Resistivity (Ω.cm)			Conductivity (S/cm)			
Time (min)	Voltage (V)	Set 1	Set 2	Set 3	Set 1	Set 2	Set 3	Average
30	800	1.67×10^{6}	2.01×10^{6}	1.12×10^{6}	6.24×10^{-7}	4.98×10^{-7}	8.94×10^{-7}	6.72×10^{-7}
	900	4.93×10^{6}	4.60×10^{6}	4.97×10^{6}	2.03×10^{-7}	2.18×10^{-7}	2.01×10^{-7}	2.07×10^{-7}
	1000	1.59×10^{7}	1.55×10^{7}	1.77×10^{7}	6.29×10^{-8}	6.46×10^{-8}	5.64×10^{-8}	6.13×10^{-8}
	1100	1.17×10^{7}	1.17×10^{7}	1.29×10^{7}	8.58×10^{-8}	8.56×10^{-8}	7.77×10^{-8}	8.30×10^{-8}
	1300	9.53×10^{6}	9.99×10^{6}	9.48×10^{6}	1.05×10^{-7}	1.00×10^{-7}	1.06×10^{-7}	1.03×10^{-7}
	1500	1.14×10^{7}	1.27×10^{7}	1.16×10^{7}	8.76×10^{-8}	7.86×10^{-8}	8.63×10^{-8}	8.41×10^{-8}
60	800	5.36×10^{6}	5.10×10^{6}	5.53×10^{6}	1.87×10^{-7}	1.96×10^{-7}	1.81×10^{-7}	1.88×10^{-7}
	900	1.16×10^{7}	8.84×10^{6}	8.46×10^{6}	8.66×10^{-8}	1.18×10^{-7}	1.18×10^{-7}	1.08×10^{-7}
	1000	1.50×10^{7}	1.77×10^{7}	1.61×10^{7}	6.67×10^{-8}	5.66×10^{-8}	6.21×10^{-8}	6.18×10^{-8}
	1100	1.98×10^{7}	1.68×10^{7}	1.79×10^{7}	5.05×10^{-8}	5.94×10^{-8}	5.59×10^{-8}	5.53×10^{-8}
	1300	1.28×10^{7}	1.39×10^{7}	1.36×10^{7}	7.83×10^{-8}	7.18×10^{-8}	7.38×10^{-8}	7.46×10^{-8}
	1500	1.27×10^{7}	1.60×10^{7}	1.67×10^{7}	6.11×10^{-8}	6.24×10^{-8}	5.97×10^{-8}	6.11×10^{-8}
90	800	9.92×10^{6}	1.03×10^{6}	1.17×10^{6}	1.01×10^{-8}	9.73×10^{-8}	8.54×10^{-8}	9.45×10^{-8}
	900	9.79×10^{6}	9.35×10^{6}	9.81×10^{6}	1.02×10^{-7}	1.07×10^{-7}	1.02×10^{-7}	1.04×10^{-7}
	1000	2.38×10^{7}	2.41×10^{7}	2.44×10^{7}	4.21×10^{-8}	4.15×10^{-8}	4.09×10^{-8}	4.15×10^{-8}
	1100	2.50×10^{7}	2.65×10^{7}	2.57×10^{7}	3.99×10^{-8}	3.78×10^{-8}	3.89×10^{-8}	3.89×10^{-8}
	1300	2.32×10^{7}	2.20×10^{7}	2.45×10^{7}	4.32×10^{-8}	4.54×10^{-8}	4.09×10^{-8}	4.32×10^{-8}
	1500	2.93×10^{7}	2.92×10^{7}	3.02×10^{7}	3.42×10^{-8}	3.43×10^{-8}	3.31×10^{-8}	3.39×10^{-8}

Table E.2 Electrical conductivity of iodine-doped AC plasma-polymerized polypyrrole (*in situ* doping).

Condition		Resistivity (Ω.cm)			Conductivity (S/cm)			
Time (min)	Voltage (V)	Set 1	Set 2	Set 3	Set 1	Set 2	Set 3	Average
30	800	6.26×10^{5}	5.76×10^{5}	6.07×10^{5}	1.60×10^{-6}	1.74×10^{-6}	1.65×10^{-6}	1.66×10^{-6}
	900	7.11×10^{5}	7.07×10^{5}	7.02×10^{5}	1.41×10^{-6}	1.41×10^{-6}	1.43×10^{-6}	1.42×10^{-6}
	1000	2.13×10^{6}	2.15×10^{6}	2.16×10^{6}	4.69×10^{-7}	4.65×10^{-7}	4.63×10^{-7}	4.66×10^{-7}
	1100	2.04×10^{6}	2.03×10^{6}	2.01×10^{6}	4.89×10^{-7}	4.92×10^{-7}	4.98×10^{-7}	4.93×10^{-7}
	1300	2.09×10^{6}	2.10×10^{6}	2.08×10^{6}	4.79×10^{-7}	4.76×10^{-7}	4.82×10^{-7}	4.79×10^{-7}
	1500	2.28×10^{6}	2.23×10^{6}	2.26×10^{6}	4.39×10^{-7}	4.48×10^{-7}	4.42×10^{-7}	4.43×10^{-7}
60	800	7.92×10^{5}	8.07×10^{5}	8.05×10^{5}	1.26×10^{-6}	1.24×10^{-6}	1.24×10^{-6}	1.25×10^{-6}
	900	1.48×10^{6}	1.47×10^{6}	1.47×10^{6}	6.77×10^{-7}	6.82×10^{-7}	6.82×10^{-7}	6.80×10^{-7}
	1000	2.71×10^{6}	2.71×10^{6}	2.70×10^{6}	3.68×10^{-7}	3.69×10^{-7}	3.70×10^{-7}	3.69×10^{-7}
	1100	2.61×10^{6}	2.63×10^{6}	2.69×10^{6}	3.83×10^{-7}	3.80×10^{-7}	3.72×10^{-7}	3.78×10^{-7}
	1300	3.14×10^{6}	3.10×10^{6}	3.08×10^{6}	3.18×10^{-7}	3.23×10^{-7}	3.25×10^{-7}	3.22×10^{-7}
	1500	3.26×10^{6}	3.29×10^{6}	3.26×10^{6}	3.07×10^{-7}	3.04×10^{-7}	3.06×10^{-7}	3.06×10^{-7}
90	800	1.19×10^{6}	1.21×10^{6}	1.18×10^{6}	8.39×10^{-7}	8.23×10^{-7}	8.50×10^{-7}	8.38×10^{-7}
	900	1.82×10^{6}	1.86×10^{6}	1.89×10^{6}	5.50×10^{-7}	5.38×10^{-7}	5.28×10^{-7}	5.38×10^{-7}
	1000	4.49×10^{6}	4.59×10^{6}	4.57×10^{6}	2.23×10^{-7}	2.18×10^{-7}	2.19×10^{-7}	2.20×10^{-7}
	1100	4.17×10^{6}	4.15×10^{6}	4.14×10^{6}	2.40×10^{-7}	2.41×10^{-7}	2.42×10^{-7}	2.41×10^{-7}
	1300	4.97×10^{6}	4.92×10^{6}	4.94×10^{6}	2.01×10^{-7}	2.03×10^{-7}	2.02×10^{-7}	2.02×10^{-7}
	1500	5.22×10^{6}	4.94×10^{6}	5.21×10^{6}	1.92×10^{-7}	2.02×10^{-7}	1.92×10^{-7}	1.95×10^{-7}

Table E.3 Electrical conductivity of iodine-doped AC plasma-polymerized polypyrrole (*in situ* doping) at 800 V for 30 minute.

Time	Resistivity (Ω.cm)			Conductivity (S/cm)			
(min)	Set 1	Set 2	Set 3	Set 1	Set 2	Set 3	Average
0	6.23×10^{5}	5.76×10^{5}	6.07×10^{5}	1.60×10^{-6}	1.74×10^{-6}	1.65×10^{-6}	1.66×10^{-6}
60	6.30×10^{5}	6.15×10^{5}	6.29×10^{5}	1.59×10^{-6}	1.63×10^{-6}	1.59×10^{-6}	1.60×10^{-6}
120	6.32×10^{5}	6.44×10^{5}	6.46×10^{5}	1.58×10^{-6}	1.55×10^{-6}	1.55×10^{-6}	1.56×10^{-6}
300	6.51×10^{5}	6.50×10^{5}	6.60×10^{5}	1.54×10^{-6}	1.54×10^{-6}	1.51×10^{-6}	1.53×10^{-6}
1440	7.50×10^{5}	7.41×10^{5}	7.63×10^{5}	1.33×10^{-6}	1.35×10^{-6}	1.31×10^{-6}	1.33×10^{-6}
2880	7.72×10^{5}	7.64×10^{5}	7.65×10^{5}	1.30×10^{-6}	1.31×10^{-6}	1.31×10^{-6}	1.30×10^{-6}
4320	8.30×10^{5}	7.95×10^{5}	7.97×10^{5}	1.21×10^{-6}	1.26×10^{-6}	1.26×10^{-6}	1.24×10^{-6}
5260	8.37×10^{5}	8.12×10^{5}	8.16×10^{5}	1.19×10^{-6}	1.23×10^{-6}	1.23×10^{-6}	1.22×10^{-6}
7200	8.23×10^{5}	8.27×10^{5}	8.34×10^{5}	1.22×10^{-6}	1.21×10^{-6}	1.20×10^{-6}	1.21×10^{-6}

Table E.4 Electrical conductivity of iodine-doped AC plasma-polymerized polypyrrole (*in situ* doping) at 800 V for 60 minute.

Time	Resistivity (Ω.cm)			Conductivity (S/cm)			
(min)	Set 1	Set 2	Set 3	Set 1	Set 2	Set 3	Average
0	7.92×10^{5}	8.07×10^{5}	8.05×10^{5}	1.26×10^{-6}	1.24×10^{-6}	1.24×10^{-6}	1.25×10^{-6}
60	8.11×10^{5}	8.24×10^{5}	8.09×10^{5}	1.23×10^{-6}	1.21×10^{-6}	1.24×10^{-6}	1.23×10^{-6}
120	8.30×10^{5}	8.41×10^{5}	8.22×10^{5}	1.21×10^{-6}	1.19×10^{-6}	1.22×10^{-6}	1.20×10^{-6}
300	8.61×10^{5}	8.44×10^{5}	8.53×10^{5}	1.61×10^{-6}	1.19×10^{-6}	1.17×10^{-6}	1.17×10^{-6}
1440	9.55×10^{5}	9.75×10^{5}	9.63×10^{5}	1.05×10^{-6}	1.03×10^{-6}	1.04×10^{-6}	1.04×10^{-6}
2880	9.74×10^{5}	9.92×10^{5}	9.99×10^{5}	1.03×10^{-6}	1.01×10^{-6}	1.00×10^{-6}	1.01×10^{-6}
4320	1.07×10^{6}	1.05×10^{6}	1.05×10^{6}	9.34×10^{-7}	9.53×10^{-7}	9.56×10^{-7}	9.47×10^{-7}
5260	1.09×10^{6}	1.11×10^{6}	1.12×10^{6}	9.26×10^{-7}	8.94×10^{-7}	8.91×10^{-7}	9.04×10^{-7}
7200	1.13×10^{6}	1.14×10^{6}	1.13×10^{6}	8.86×10^{-7}	8.78×10^{-7}	8.82×10^{-7}	8.82×10^{-7}

Table E.5 Electrical conductivity of iodine-doped AC plasma-polymerized polypyrrole (*in situ* doping) at 800 V for 90 minute.

Time	Resistivity (Ω.cm)			Conductivity (S/cm)			
(min)	Set 1	Set 2	Set 3	Set 1	Set 2	Set 3	Average
0	1.19×10^{6}	1.21×10^{6}	1.18×10^{6}	8.39×10^{-7}	8.24×10^{-7}	8.50×10^{-7}	8.38×10^{-7}
60	1.25×10^{6}	1.22×10^{6}	1.24×10^{6}	8.03×10^{-7}	8.20×10^{-7}	8.06×10^{-7}	8.10×10^{-7}
120	1.28×10^{6}	1.29×10^{6}	1.28×10^{6}	7.78×10^{-7}	7.77×10^{-7}	7.79×10^{-7}	7.78×10^{-7}
300	1.30×10^{6}	1.31×10^{6}	1.30×10^{6}	7.69×10^{-7}	7.63×10^{-7}	7.67×10^{-7}	7.66×10^{-7}
1440	1.40×10^{6}	1.37×10^{6}	1.39×10^{6}	7.16×10^{-7}	7.29×10^{-7}	7.22×10^{-7}	7.22×10^{-7}
2880	1.45×10^{6}	1.44×10^{6}	1.47×10^{6}	6.91×10^{-7}	6.94×10^{-7}	6.81×10^{-7}	6.89×10^{-7}
4320	1.54×10^{6}	1.59×10^{6}	1.45×10^{6}	6.50×10^{-7}	6.28×10^{-7}	6.89×10^{-7}	6.55×10^{-7}
5260	1.65×10^{6}	1.63×10^{6}	1.58×10^{6}	6.05×10^{-7}	6.14×10^{-7}	6.34×10^{-7}	6.18×10^{-7}
7200	1.69×10^{6}	1.66×10^{6}	1.69×10^{6}	5.93×10^{-7}	6.03×10^{-7}	5.91×10^{-7}	5.96×10^{-7}

Table E.6 Electrical conductivity of AC plasma-polymerized polypyrrole at 800 V for 30 minute and iodine *ex situ* doping for 24 hours.

Time	Resistivity (Ω.cm)			Conductivity (S/cm)			
(min)	Set 1	Set 2	Set 3	Set 1	Set 2	Set 3	Average
0	3.16×10^{5}	3.08×10^{5}	3.25×10^{5}	3.15×10^{-6}	3.24×10^{-6}	3.08×10^{-6}	3.16×10^{-6}
30	4.10×10^{5}	3.98×10^{5}	4.05×10^{5}	2.44×10^{-6}	2.51×10^{-6}	2.47×10^{-6}	2.47×10^{-6}
60	5.04×10^{5}	4.88×10^{5}	5.04×10^{5}	1.98×10^{-6}	2.05×10^{-6}	1.99×10^{-6}	2.01×10^{-6}
120	6.03×10^{5}	6.09×10^{5}	6.09×10^{5}	1.66×10^{-6}	1.64×10^{-6}	1.64×10^{-6}	1.65×10^{-6}
180	7.76×10^{5}	8.36×10^{5}	9.26×10^{5}	1.29×10^{-6}	1.20×10^{-6}	1.08×10^{-6}	1.19×10^{-6}
240	1.57×10^{6}	1.67×10^{6}	1.64×10^{6}	6.35×10^{-7}	6.00×10^{-7}	6.09×10^{-7}	6.14×10^{-7}
300	1.97×10^{6}	1.97×10^{6}	1.97×10^{6}	5.07×10^{-7}	5.08×10^{-7}	5.07×10^{-7}	5.08×10^{-7}
1440	2.12×10^{6}	2.12×10^{6}	2.05×10^{6}	4.72×10^{-7}	4.72×10^{-7}	4.89×10^{-7}	4.77×10^{-7}
2160	2.20×10^{6}	2.19×10^{6}	2.25×10^{6}	4.54×10^{-7}	4.57×10^{-7}	4.45×10^{-7}	4.52×10^{-7}

Table E.7 Electrical conductivity of AC plasma-polymerized polypyrrole at 800 V for 60 minute and iodine *ex situ* doping for 24 hours.

Time	Resistivity (Ω.cm)			Conductivity (S/cm)			
(min)	Set 1	Set 2	Set 3	Set 1	Set 2	Set 3	Average
0	8.55×10^{5}	8.79×10^{5}	8.71×10^{5}	1.17×10^{-6}	1.14×10^{-6}	1.15×10^{-6}	1.15×10^{-6}
30	1.08×10^{6}	1.10×10^{6}	1.07×10^{6}	9.24×10^{-7}	9.07×10^{-7}	9.37×10^{-7}	9.22×10^{-7}
60	1.39×10^{6}	1.37×10^{6}	1.41×10^{6}	7.21×10^{-7}	7.28×10^{-7}	7.11×10^{-7}	7.20×10^{-7}
120	1.69×10^{6}	1.64×10^{6}	1.64×10^{6}	5.92×10^{-7}	6.09×10^{-7}	6.10×10^{-7}	6.04×10^{-7}
180	2.07×10^{6}	2.03×10^{6}	2.09×10^{6}	4.83×10^{-7}	4.92×10^{-7}	4.78×10^{-7}	4.84×10^{-7}
240	3.20×10^{6}	3.40×10^{6}	3.37×10^{6}	3.13×10^{-7}	2.95×10^{-7}	2.97×10^{-7}	3.01×10^{-7}
300	4.94×10^{6}	4.73×10^{6}	5.05×10^{6}	2.02×10^{-7}	2.11×10^{-7}	1.98×10^{-7}	2.04×10^{-7}
1440	5.74×10^{6}	5.71×10^{6}	6.29×10^{6}	1.74×10^{-7}	1.75×10^{-7}	1.59×10^{-7}	1.69×10^{-7}
2160	6.44×10^{6}	6.32×10^{6}	6.38×10^{6}	1.55×10^{-7}	1.58×10^{-7}	1.57×10^{-7}	1.57×10^{-7}

Table E.8 Electrical conductivity of AC plasma-polymerized polypyrrole at 800 V for 90 minute and iodine *ex situ* doping for 24 hours.

Time	Resistivity (Ω.cm)			Conductivity (S/cm)			
(min)	Set 1	Set 2	Set 3	Set 1	Set 2	Set 3	Average
0	1.40×10^{6}	1.51×10^{6}	1.49×10^{6}	7.12×10^{-7}	6.64×10^{-7}	6.72×10^{-7}	6.83×10^{-7}
30	1.83×10^{6}	1.85×10^{6}	1.87×10^{6}	5.47×10^{-7}	5.40×10^{-7}	5.33×10^{-7}	5.40×10^{-7}
60	2.23×10^{6}	2.24×10^{6}	2.26×10^{6}	4.50×10^{-7}	4.48×10^{-7}	4.43×10^{-7}	4.46×10^{-7}
120	2.71×10^{6}	2.73×10^{6}	2.62×10^{6}	3.68×10^{-7}	3.66×10^{-7}	3.82×10^{-7}	3.72×10^{-7}
180	3.13×10^{6}	3.11×10^{6}	3.11×10^{6}	3.19×10^{-7}	3.22×10^{-7}	3.22×10^{-7}	3.21×10^{-7}
240	4.01×10^{6}	3.96×10^{6}	4.08×10^{6}	2.49×10^{-7}	2.53×10^{-7}	2.45×10^{-7}	2.49×10^{-7}
300	5.64×10^{6}	6.40×10^{6}	6.19×10^{6}	1.77×10^{-7}	1.56×10^{-7}	1.61×10^{-7}	1.65×10^{-7}
1440	1.04×10^{6}	1.05×10^{6}	1.00×10^{6}	9.64×10^{-7}	9.55×10^{-7}	9.97×10^{-7}	9.72×10^{-7}
2160	1.11×10^{6}	1.09×10^{6}	1.12×10^{6}	8.99×10^{-7}	9.17×10^{-7}	8.95×10^{-7}	9.04×10^{-7}

VITAE

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