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Uchiyama, S., and Sakamoto, H. (1997). Immobilization of uricase to gas diffusion carbon felt by electropolymerization of aniline and its application as an enzyme reactor for uric acid sensor. Talanta, 44(8), 1435-1439.

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APPENDICES

APPENDIX A Determination of Molecular Weight of Polyaniline

Molecular weight of polyaniline emeraldine base was determined by using Gel Permeation Chromatography (Waters, 150C-Plus). A refractometer was used as a detector, with an ultrastyragel column at 85°C using NMP (LabScan, HPLC grade) as a solvent, and polystyrenes were used as the standard materials. The polyaniline powder was dissolved in NMP h.p.l.c. grade to give a 0.6 %wt solution. This sample was passed through 0.2μm filter prior to injection. The molecular weights of polyaniline emeraldine base are tabulated in Table A.1

Table A. 1 The molecular weight of polyaniline emeraldine base at 0.6% wt in NMP

	Molecular Weight			
	1st sample	2nd sample	Mean	S.D.
Retention time, R_t (min)	13.083	13.952	13.517	0.6131
M_n (g/mole)	22311	20775	21543	1086.1
M_w (g/mole)	93603	85941	89772	5417.9
Polydispersity, (M_w/M_n)	4.1950	4.1370	4.1660	0.0410

APPENDIX B Determination of Geometric Correction Factor (K)

Geometric correction factor (K) is a correction factor which involves the configuration and probe tip spacing of the four-point probe. K factor was calculated by comparing the measured specific resistivity of standard materials from the constructed four-point probe detector with the known specific resistivity.

In this work, the standard materials used were silicon wafers. The geometric correction factor (K) was calculated by using equation B-1 and is shown in Table B.1

$$K = \frac{1}{\sigma_{ref} \times t \times R} \qquad \text{(B-1)}$$

When K = geometric correction factor (w/L)

σ_{ref} = conductivity from reference (S/cm)

R = resistivity from four-point probe (Ω)

t = thickness of standard material (cm).

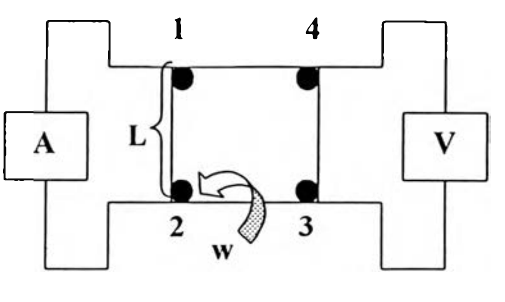

Figure B. 1 The schematic of Four-point probe meter.

Table B. 1 Data of the geometric correction factor (K) determination

Materials	σ_{ref}	Thickness (cm)	Resistance (Ω)	K
Si 10-28B	0.0278	0.0530	4052.6	0.1680
	0.0278	0.0530	3504.7	0.1950
	0.0278	0.0530	3558.6	0.1920
	0.0278	0.0530	3584.1	0.1900
	0.0278	0.0530	2832.2	0.2410
	0.0278	0.0530	3091.6	0.2210
Si 10-28A	0.0286	0.0520	2699.7	0.2460
	0.0286	0.0520	2689.9	0.2470
	0.0286	0.0520	2340.9	0.2340
	0.0286	0.0520	2818.8	0.2360
	0.0286	0.0520	2211.5	0.3010
SiO_2/ TaB	0.9333	0.0540	115.30	0.1960
	0.9333	0.0540	115.19	0.1960
	0.9333	0.0540	105.44	0.2140
	0.9333	0.0540	100.00	0.2260
	0.9333	0.0540	110.81	0.2040
Average K				0.2390
S.D.				0.0563

APPEXDIX C Determination of the applied current used for various acid dopant types

C-1 Applied current used for HCl-doped polyaniline film

Testing conditions: Testing temperature = 25°C

Relative humidity = 65-70%

Amount of moisture content = 2-5%

Table C. 1 Effect of the applied current on the specific conductivity of HCl-doped polyaniline film at 25°C, with relative humidity 65-70%

Applied current (mA)	Specific conductivity (S/cm) of each acid/polymer concentration ratio					
	1:1	10:1	50:1	100:1	500:1	1000:1
0.0005	0.0170	-	-	-	0.0200	-
0.0010	0.0174	-	-	-	0.0199	0.0130
0.0020	0.0177	0.1177	0.1452	0.0351	0.0208	0.0133
0.0100	0.0174	0.1140	0.1447	0.0353	0.0200	0.0138
0.0300	-	0.1094	0.1491	0.0358	-	0.0131
0.0500	-	0.1107	0.1478	0.0358	-	-

C-2 Applied current used for H_3PO_4-doped polyaniline film

Table C. 2 Effect of the applied current on the specific conductivity of H_3PO_4-doped polyaniline film at 25°C, with relative humidity 65-70%

Applied current (mA)	Specific conductivity (S/cm) of each acid/polymer concentration ration		
	1:10	1:1	10:1
0.0010	0.0046	0.0249	-
0.0020	0.0046	0.0242	-
0.0050	0.0046	0.0243	0.0834
0.0100	0.0047	0.0249	0.0847
0.0150	0.0046	0.0245	0.0849
0.0200	-	0.0240	0.0848

C-3 Applied current used for CH_3COOH-doped polyaniline film

Table C. 3 Effect of the applied current on the specific conductivity of CH_3COOH-doped polyaniline film at 25°C, with relative humidity 65-70%

Applied Current (mA)	Specific conductivity (S/cm) of each acid/polymer concentration ratios (C_a/C_p)					
	1:1	100:1	500:1	1000:1	2000:1	5000:1
0.00001	0.0022	0.0014	-	-	-	-
0.00002	0.0023	0.0014	-	-	-	-
0.00005	0.0023	0.0014	-	-	-	-
0.00010	0.0022	0.0014	0.0179	0.0182	-	-
0.00015	0.0022	-	0.0179	0.0182	-	0.0077
0.00020	0.0022	-	0.0177	0.0181	0.0127	0.0077
0.00050	0.0023	-	0.0180	0.0187	0.0126	0.0078
0.00100	0.0023	-	0.0179	0.0184	0.0121	0.0078
0.00200	0.0023	-	0.0181	0.0186	0.0126	0.0077

C-4 Applied current used for $C_5H_{11}COOH$-doped polyaniline film

Table C. 4 Effect of applied current on the specific conductivity of $C_5H_{11}COOH$-doped polyaniline film at 25°C, with relative humidity 65-70%

Applied current (mA)	Specific conductivity (S/cm) of each acid/polymer concentration ratio (C_a/C_p)					
	1:1	100:1	500:1	1000:1	2000:1	5000:1
0.00001	0.00096	0.00214	-	-	-	-
0.00002	0.00096	0.00211	-	-	-	0.00962
0.00005	0.00095	0.00216	-	-	-	0.00954
0.00010	0.00095	0.00196	0.00423	0.01257	0.01238	0.00965
0.00050	-	-	0.00421	0.01225	0.01262	0.00964
0.00100	-	-	0.00429	0.01273	0.01272	0.00944
0.00300	-	-	0.00421	0.01218	0.01274	0.00960
0.00500	-	-	0.00420	0.01215	0.01270	-
0.01000	-	-	-	-	0.01276	-

APPENDIX D Electrical Properties Data

D-1 Effect of Aging Time on the Specific Conductivity

Testing conditions: Testing temperature = 25°C

Relative humidity = 65-70%

Amount of moisture content = 2-5%

Table D. 1 Effect of aging time on the specific conductivity of HCl-doped polyaniline film with various C_a/C_p (Figure 4.25)

C_a/C_p	Number of days stored	Specific conductivity (S/cm)			
		1st	2 nd	Mean	S.D.
1:1	1	0.0256	0.0210	0.0233	0.0032
	5	0.0135	0.0124	0.0129	0.0007
	10	0.0135	0.0166	0.0150	0.0021
	20	0.0104	0.0143	0.0124	0.0027
	30	0.0117	0.0114	0.0116	0.0002
	40	0.0114	0.0113	0.0114	0.0001
	50	0.0255	0.0105	0.0180	0.0106
10:1	1	0.2666	0.2567	0.2617	0.0070
	5	0.1520	0.1470	0.1495	0.0035
	10	0.1249	0.01347	0.0692	0.0787
	20	0.0123	0.0122	0.0123	0.0007
	30	0.0125	0.0102	0.0114	0.0016
	40	0.0112	0.0262	0.0187	0.0106
	50	0.0203	0.0101	0.0152	0.0072

C_a/C_p	Number of days stored	Specific conductivity (S/cm)			
		1st	2nd	Mean	S.D.
100:1	1	0.1466	0.0833	0.1150	0.0448
	5	0.2110	0.1737	0.1924	0.0264
	10	0.1360	0.1237	0.1299	0.0087
	20	0.0382	0.0360	0.0371	0.0015
	30	0.0365	0.0363	0.0364	0.0001
	40	0.0344	0.0443	0.0394	0.0069
	50	0.0336	0.0364	0.0350	0.0020
1000:1	1	0.0105	0.0105	0.0105	0.0000
	5	0.0124	0.0103	0.0114	0.0015
	10	0.0114	0.0066	0.0089	0.0034
	20	0.0146	0.0105	0.0125	0.0029
	30	0.0135	0.0126	0.0130	0.0006
	40	0.0105	0.0117	0.0111	0.0008

Table D. 2 Effect of aging time on the specific conductivity of H_3PO_4- doped polyaniline film with C_a/C_p = 1:1 (Figure 4.26)

C_a/C_p	Number of days stored	Specific conductivity (S/cm)			
		1st	2nd	Mean	S.D.
1:1	1	0.2628	0.1053	0.1841	0.1113
	5	0.1056	0.1055	0.1056	0.0001
	10	0.0810	0.0823	0.0817	0.0009
	15	0.1370	0.1050	0.1210	0.0226
	20	0.0206	0.0432	0.0319	0.0159
	30	0.0295	0.0345	0.0320	0.0035
	40	0.0265	0.0323	0.0294	0.0041
	50	0.0314	0.0323	0.0319	0.0006

Table D. 3 Effect of aging time on the specific conductivity of CH_3COOH-doped polyaniline film with various C_a/C_p (Figure 4.27)

C_a/C_p	Number of days stored	Specific conductivity (S/cm)			
		1st	2nd	Mean	S.D.
1:1	1	0.0020	0.0020	0.0020	0.0000
	5	0.0020	0.0017	0.0019	0.0002
	10	0.0021	0.0024	0.0023	0.0002
	15	0.0023	0.0022	0.0023	0.0001
	20	0.0015	0.0015	0.0015	0.0000
	30	0.0016	0.0017	0.0017	0.0001
	40	0.0012	0.0016	0.0014	0.0003
	50	0.0012	0.0017	0.0015	0.0003
1000:1	1	0.0194	0.0215	0.0205	0.0014
	5	0.0194	0.0233	0.0214	0.0027
	10	0.0174	0.0234	0.0204	0.0042
	15	0.0186	0.0241	0.0214	0.0039
	20	0.0158	0.0213	0.0186	0.0039
	30	0.0157	0.0205	0.0181	0.0034
	40	0.0155	0.0240	0.0197	0.0060
	50	0.0136	0.0235	0.0185	0.0070

Table D. 4 Effect of aging time on the specific conductivity of $C_5H_{11}COOH$-doped polyaniline film with various C_a/C_p (Figure 4.28)

C_a/C_p	Number of days stored	specific conductivity (S/cm)			
		1st	2nd	Mean	S.D.
1:1	1	0.0010	0.0014	0.0012	0.0003
	5	0.0011	0.0018	0.0015	0.0005
	10	0.0008	0.0015	0.0012	0.0005
	15	0.0010	0.0010	0.0010	0.0000
	20	0.0007	0.0007	0.0007	0.0000
	30	0.0009	0.0009	0.0009	0.0000
	40	0.0008	0.0008	0.0008	0.0000
1000:1	1	0.0108	0.0103	0.0106	0.0004
	5	0.0099	0.0100	0.0010	0.0000
	10	0.0083	0.0098	0.0091	0.0011
	15	0.0078	0.0076	0.0077	0.0001
	20	0.0083	0.0072	0.0078	0.0008
	30	0.0076	0.0085	0.0081	0.0006
	40	0.0122	0.0087	0.0104	0.0025
	50	0.0114	0.0066	0.0090	0.0034

D-2 Effect of dopant types and acid/polymer concentration ratio (C_a/C_p) on the specific conductivity

Table D. 5 Effect of C_a/C_p on the specific conductivity of polyaniline films doped with HCl, CH_3COOH and $C_5H_{11}COOH$ measured in air at 25°C, with relative humidity 65-70% (Figure 4.29)

Acid dopant	C_a/C_p	Mole ratio (N_a/N_p)	Specific conductivity (S/cm)			
			1st	2nd	Mean	S.D.
HCl	1:1	9.8E+00	0.0256	0.0280	0.0268	0.0017
	10:1	9.8E+01	0.1032	0.1097	0.1065	0.0046
	50:1	4.9E+02	0.0205	0.0181	0.0193	0.0017
	100:1	9.8E+02	0.0165	0.0158	0.0162	0.0005
	500:1	4.9E+03	0.0113	0.0134	0.0124	0.0015
	1000:1	9.8E+03	0.0125	0.0125	0.0125	0.0000
CH_3COOH	1:1	5.9E+00	0.0021	0.002	0.0021	0.0001
	10:1	5.9E+01	0.0022	0.0021	0.0022	0.0001
	50:1	2.9E+02	0.0031	0.0036	0.0034	0.0004
	100:1	5.9E+02	0.0062	0.0069	0.0066	0.0005
	500:1	2.9E+03	0.0106	0.0104	0.0105	0.0001
	1000:1	5.9E+03	0.0111	0.0114	0.0113	0.0002
	2000:1	1.2E+04	0.0107	0.0119	0.0113	0.0008
	5000:1	2.9E+04	0.0107	0.0106	0.0107	0.0001
$C_5H_{11}COOH$	1:1	3.1E+00	0.0001	0.0001	0.0001	0.0000
	10:1	3.1E+01	0.0001	0.0001	0.0001	0.0000
	50:1	1.5E+02	0.0014	0.0019	0.0017	0.0004
	100:1	3.1E+02	0.0020	0.0022	0.0021	0.0001
	500:1	1.5E+03	0.0122	0.0102	0.0112	0.0014
	1000:1	3.1E+03	0.0106	0.0116	0.0111	0.0007
	2000:1	6.2E+03	0.0126	0.0099	0.0113	0.0019
	5000:1	1.5E+04	0.0094	0.0105	0.0100	0.0008

Table D. 6 Effect of N_a/N_p on the specific conductivity of polyaniline films doped with HCl, CH_3COOH and $C_5H_{11}COOH$ measured in air at 25°C, with relative humidity 65-70% (Figure 4.30)

Acid dopants	Mole ratio (N_a/N_p)	Specific conductivity (S/cm)			
		1st	2nd	Mean	S.D.
HCl	9.8E+00	0.0256	0.0280	0.0268	0.0017
	9.8E+01	0.1032	0.1097	0.1065	0.0046
	4.9E+02	0.0205	.0181	0.0193	0.0017
	9.8E+02	0.0165	0.0158	0.0162	0.0005
	4.9E+03	0.0113	0.0134	0.0124	0.0015
	9.8E+03	0.0125	0.0125	0.0125	0.0000
CH_3COOH	5.9E+00	0.0021	0.0020	0.0021	0.0001
	5.9E+01	0.0022	0.0021	0.0022	0.0001
	2.9E+02	0.0031	0.0036	0.0034	0.0004
	5.9E+02	0.0062	0.0069	0.0066	0.0005
	2.9E+03	0.0106	0.0104	0.0105	0.0001
	5.9E+03	0.0111	0.0114	0.0113	0.0002
	1.2E+04	0.0107	0.0119	0.0113	0.0008
	2.9E+04	0.0107	0.0106	0.0107	0.0001
$C_5H_{11}COOH$	3.1E+00	0.0001	0.0001	0.0001	0.0000
	3.1E+01	0.0001	0.0001	0.0001	0.0000
	1.5E+02	0.0014	0.0019	0.0017	0.0004
	3.1E+02	0.0020	0.0022	0.0021	0.0001
	1.5E+03	0.0122	0.0102	0.0112	0.0014
	3.1E+03	0.0106	0.0116	0.0111	0.0007
	6.2E+03	0.0126	0.0099	0.0113	0.0019
	1.5E+04	0.0094	0.0105	0.0100	0.0008

D-3 The Specific conductivity of doped-polyaniline film when exposed to water

Testing conditions: Testing temperature = 25°C
Relative humidity = 65-70%
Amount of moisture content in dry state = 2-5%

Table D. 7 The specific conductivity of HCl-doped polyaniline film when exposed to water at 25°C, with relative humidity 65-70% (Figure 4.33)

Medium	C_a/C_p	Mole ratio	Specific conductivity (S/cm)			
			1st	2nd	Mean	S.D.
in air	1:1	9.8E+00	0.0331	0.0320	0.0326	0.0008
	10:1	9.8E+01	0.1032	0.1097	0.1065	0.0046
	50:1	4.9E+02	0.0205	0.0181	0.0193	0.0017
	100:1	9.8E+02	0.0165	0.0158	0.0162	0.0005
	500:1	4.9E+03	0.0113	0.0134	0.0124	0.0015
	1000:1	9.8E+03	0.0093	0.0107	0.0100	0.0010
in water	1:1	9.8E+00	0.0546	0.0546	0.0546	0.0000
	10:1	9.8E+01	0.1561	0.1510	0.1536	0.0036
	50:1	4.9E+02	0.0396	0.0363	0.0380	0.0023
	100:1	9.8E+02	0.0396	0.0354	0.0375	0.0030
	500:1	4.9E+03	0.0298	0.0202	0.0250	0.0068
	1000:1	9.8E+03	0.0202	0.0234	0.0218	0.0023

Table D. 8 The specific conductivity of H_3PO_4-doped polyaniline film when exposed to water at 25°C, with relative humidity 65-70% (Figure 4.35)

Medium	C_a/C_p	Mole ratio (N_a/N_p)	Specific conductivity (S/cm)			
			1st	2^{nd}	Mean	S.D.
in air	1:10	3.6E-01	0.0051	0.0054	0.0053	0.0002
	1:1	3.6E+00	0.0262	0.0244	0.0253	0.0013
	5:1	1.8E+01	0.0369	0.0388	0.0379	0.0013
	10:1	3.6E+01	0.0614	0.0593	0.0604	0.0015
in water	1:10	3.6E-01	0.0068	0.0069	0.0069	0.0001
	1:1	3.6E+00	0.0905	0.0900	0.0903	0.0004
	5:1	1.8E+01	0.0921	0.1117	0.1019	0.0139
	10:1	3.6E+01	0.1155	0.1162	0.1159	0.0005

Table D. 9 The specific conductivity of CH_3COOH-doped polyaniline film when exposed to water at 25°C, with relative humidity 65-70% (Figure 4.36)

Medium	C_a/C_p	Mole ratio (N_a/N_p)	Specific conductivity (S/cm)			
			1st	2nd	Mean	S.D.
in air	1:1	5.9E+00	0.0021	0.0020	0.0021	0.0001
	100:1	5.9E+02	0.0069	0.0062	0.0066	0.0005
	500:1	2.9E+03	0.0106	0.0104	0.0105	0.0001
	1000:1	5.9E+03	0.0111	0.0114	0.0113	0.0002
	2000:1	1.2E+04	0.0107	0.0119	0.0113	0.0008
	5000:1	2.9E+04	0.0107	0.0106	0.0107	0.0001
in water	1:1	5.9E+00	0.0063	0.0088	0.0076	0.0018
	100:1	5.9E+02	0.0147	0.0123	0.0135	0.0017
	500:1	2.9E+03	0.0171	0.0142	0.0157	0.0021
	1000:1	5.9E+03	0.0166	0.0142	0.0154	0.0017
	2000:1	1.2E+04	0.0155	0.0145	0.0150	0.0007
	5000:1	2.9E+04	0.0142	0.0165	0.0154	0.0016

Table D. 10 The specific conductivity of $C_5H_{11}COOH$-doped polyaniline film when exposed to water at 25°C, with relative humidity 65-70% (Figure 4.37)

Medium	C_a/C_p	Mole ratio (N_a/N_p)	Specific conductivity (S/cm)			
			1st	2nd	Mean	S.D.
in air	1:1	3.1E+00	0.0010	0.0010	0.0010	0.0000
	100:1	3.1E+02	0.0020	0.0021	0.0021	0.0001
	500:1	1.5E+03	0.0102	-	0.0102	-
	1000:1	3.1E+03	0.0106	0.0116	0.0111	0.0007
	2000:1	6.2E+03	0.0126	0.0099	0.0113	0.0019
	5000:1	1.5E+04	0.0105	0.0094	0.0100	0.0008
in water	1:1	3.1E+00	0.0101	0.0104	0.0103	0.0002
	100:1	3.1E+02	0.0116	0.0121	0.0119	0.0004
	500:1	1.5E+03	0.0140	0.0122	0.0131	0.0013
	1000:1	3.1E+03	0.0159	0.0133	0.0146	0.0018
	2000:1	6.2E+03	0.0162	0.0132	0.0147	0.0021
	5000:1	1.5E+04	0.0126	0.0145	0.0136	0.0013

D-4 The Specific Conductivity of polyaniline film when exposed to water and 100% ethanol at 25°C, with relative humidity 65-70%

Table D. 11 The specific conductivity of HCl-doped polyaniline film when exposed to water and 100% ethanol at 25°C (Figure 4.38)

Medium	C_a/C_p	Mole ratio (N_a/N_p)	Specific conductivity (S/cm)			
			1st	2^{nd}	Mean	S.D.
in air	1:1	9.8E+00	0.0331	0.0320	0.0326	0.0008
	5:1	4.9E+01	0.0463	0.04821	0.0473	0.0013
	10:1	9.8E+01	0.1032	0.1097	0.1065	0.0046
	30:1	2.9E+02	0.0387	0.0393	0.0390	0.0004
	50:1	4.9E+02	0.0205	0.0181	0.0193	0.0017
	100:1	9.8E+02	0.0165	0.0158	0.0162	0.0005
	500:1	4.9E+03	0.0113	0.0134	0.0124	0.0015
	1000:1	9.8E+03	0.0093	0.0107	0.0100	0.0010
in water	1:1	9.8E+00	0.0546	0.0546	0.0546	0.0000
	5:1	4.9E+01	0.0873	0.0876	0.0876	0.0002
	10:1	9.8E+01	0.1561	0.1510	0.1536	0.0036
	30:1	2.9E+02	0.0612	0.0592	0.0602	0.0014
	50:1	4.9E+02	0.0396	0.0363	0.0380	0.0023
	100:1	9.8E+02	0.0396	0.0354	0.0375	0.0030
	500:1	4.9E+03	0.0298	0.0202	0.0250	0.0068
	1000:1	9.8E+03	0.0202	0.0234	0.0218	0.0023
in 100% ethanol	1:1	9.8E+00	0.0438	0.0398	0.0418	0.0028
	5:1	4.9E+01	0.0653	0.0665	0.0659	0.0009
	10:1	9.8E+01	0.1258	0.1373	0.1316	0.0081
	30:1	2.9E+02	0.0483	0.0473	0.0478	0.0007
	50:1	4.9E+02	0.0355	0.0337	0.0346	0.0013
	100:1	9.8E+02	0.0342	0.0307	0.0325	0.0025
	500:1	4.9E+03	0.0103	0.0178	0.0141	0.0053
	1000:1	9.8E+03	0.0144	0.0113	0.0129	0.0022

Table D. 12 The specific conductivity of CH_3COOH-doped polyaniline film when exposed to water and 100% ethanol at 25°C, with relative humidity 65-70% (Figure 4.39)

Medium	C_a/C_p	Mole ratio (N_a/N_p)	Specific conductivity (S/cm)			
			1st	2nd	Mean	S.D.
in air	1:1	5.9E+00	0.0021	0.0020	0.0021	0.0001
	100:1	5.9E+02	0.0069	0.0062	0.0066	0.0005
	500:1	2.9E+03	0.0106	0.0104	0.0105	0.0001
	1000:1	5.9E+03	0.0111	0.0114	0.0113	0.0002
	2000:1	1.2E+04	0.0107	0.0119	0.0113	0.0008
	5000:1	2.9E+04	0.0107	0.0106	0.0107	0.0001
in water	1:1	5.9E+00	0.0063	0.0088	0.0076	0.0018
	100:1	5.9E+02	0.0147	0.0123	0.0135	0.0017
	500:1	2.9E+03	0.0171	0.0142	0.0157	0.0021
	1000:1	5.9E+03	0.0166	0.0142	0.0154	0.0017
	2000:1	1.2E+04	0.0155	0.0145	0.015	0.0007
	5000:1	2.9E+04	0.0142	0.0165	0.0154	0.0016
in 100% ethanol	1:1	5.9E+00	0.0071	0.0069	0.0070	0.0001
	100:1	5.9E+02	0.0106	0.0124	0.0115	0.0013
	500:1	2.9E+03	0.0124	0.0124	0.0124	0.0000
	1000:1	5.9E+03	0.0136	0.0134	0.0135	0.0001
	2000:1	1.2E+04	0.0140	0.0120	0.0130	0.0014
	5000:1	2.9E+04	0.0142	0.0165	0.0154	0.0016

Table D. 13 The specific conductivity of HCl-doped polyaniline films when exposed to ethanol solution at 25°C, with relative humidity 65-70% (Figure 4.41)

Ethanol concentration (M)	Specific conductivity (S/cm)			
	1st	2nd	Mean	S.D.
0.00	0.1421	0.1443	0.1432	0.0585
1.70	0.1398	0.1476	0.1437	0.6354
3.40	0.1426	0.1393	0.1410	1.3305
5.10	0.1339	0.1387	0.1363	2.0264
8.50	0.1324	0.1296	0.1310	3.4166
11.9	0.1320	0.1312	0.1316	4.8044
17.0	0.1258	0.1373	0.1316	6.8865

Table D. 14 The specific conductivity of CH_3COOH-doped polyaniline films when exposed to ethanol solution at 25°C, with relative humidity 65-70% (Figure 4.42)

Ethanol concentration (M)	Specific conductivity (S/cm)			
	1st	2nd	Mean	S.D.
0.00	0.0143	0.0146	0.0145	0.0002
1.70	0.0144	0.0144	0.0144	0.0000
3.40	0.0143	0.0144	0.0144	7.07E-05
5.10	0.0141	0.0139	0.0140	0.0001
8.50	0.0137	0.0137	0.0137	0.0000
10.2	0.0136	0.0135	0.0136	7.07E-05
11.9	0.0136	0.0135	0.0136	7.07E-05
17.0	0.0136	0.0134	0.0135	0.0001

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