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APPENDICES

APPENDIX I
PHYSICAL CHARACTERIZATION

I.1 Deposition Weight

Table I.1.1 Effect of Substrate Temperature

Substrate Temperature (°C)	Deposition Weight (mg)
-5.0	17.8
0.0	15.6
3.0	4.5
5.0	3.4
10.0	2.5

Table I.1.2 Effect of Amount of Photoinitiator

Amount of Photoinitiator (mmole)	Deposition Weight (mg)
0.430	10.0
0.861	14.0
1.722	13.2
5.167	17.2
8.612	16.5

Table I.1.3 Effect of Deposition Time

Deposition Time (hours)	Deposition Weight (mg)
4.0	3.4
8.0	17.4
12.0	15.4
18.0	16.4 (± 1.48)
24.0	20.1

Table I.1.4 Effect of Flow Rate

Flow Rate of gas mixture ($ml\ N_2/min$)	Deposition Weight (mg)
49.0	1.2
82.0	3.5
123.0	15.6
179.0	16.1
243.5	16.8
331.0	17.5

I.2 The Estimated Thickness

$$L = K \times \text{deposition weight (mg)} \qquad (\mu m)$$

$$K = \frac{10}{\rho\ (g.cm^{-3})\ A\ (cm^{2})} \qquad (mg\ .\mu m)$$

$$\rho = 1.0865 - (6.19 \times 10^{-4} \times T) + (1.36 \times 10^{-7} \times T^{2}) \qquad (g\ .cm^{-3})$$

whereas; L = estimated thickness

K = normal factor

ρ = temperature dependent density of polystyrene

A = surface area

T = experimental temperature (C)

when, T = 25 C and A = 11.35 cm^2

then, K = 0.822 $\mu m\ .\ mg^{-1}$

Table I.2.1 Effect of Substrate Temperature

Substrate Temperature (°C)	Deposition Weight (mg)	Estimated Thickness (μm)
-5.0	17.8	14.647
0.0	15.6	12.837
3.0	4.5	3.703
5.0	3.4	2.798
10.0	2.5	2.057

Table I.2.2 Effect of Amount of Photoinitiator

Amount of Photoinitiator (mmole)	Deposition Weight (mg)	Estimated Thickness (μm)
0.430	10.0	8.311
0.861	14.0	11.520
1.722	13.2	10.862
5.167	17.2	14.153
8.612	16.5	13.577

Table I.2.3 Effect on Deposition Time

Deposition Time (hours)	Deposition Weight (mg)	Estimated Thickness (μm)
4.0	3.4	2.798
8.0	17.4	14.318
12.0	15.4	12.672
18.0	16.4 (± 1.48)	13.510 (± 1.22)
24.0	20.1	16.540

Table I.2.4 Effect on Flow Rate

Flow Rate of gas mixture (ml N_2/min)	Deposition Weight (mg)	Estimated Thickness (μm)
49.0	1.2	0.987
82.0	3.5	2.88
123.0	15.6	12.837
179.0	16.1	13.248
243.5	16.8	13.824
331.0	17.5	14.400

APPENDIX II
GEL PERMEATION CHARACTERIZATION

II.1 Effect of Substrate Temperature

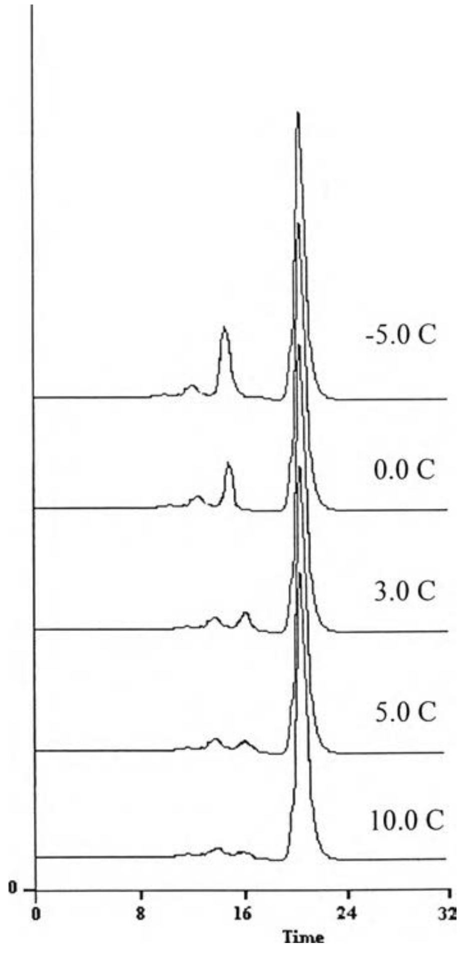

Figure II.1 Gel permeation chromatogram of deposited film at the substrate. temperature of -5.0 - 10.0 °C

II.2 Effect of Amount of Photoinitiator

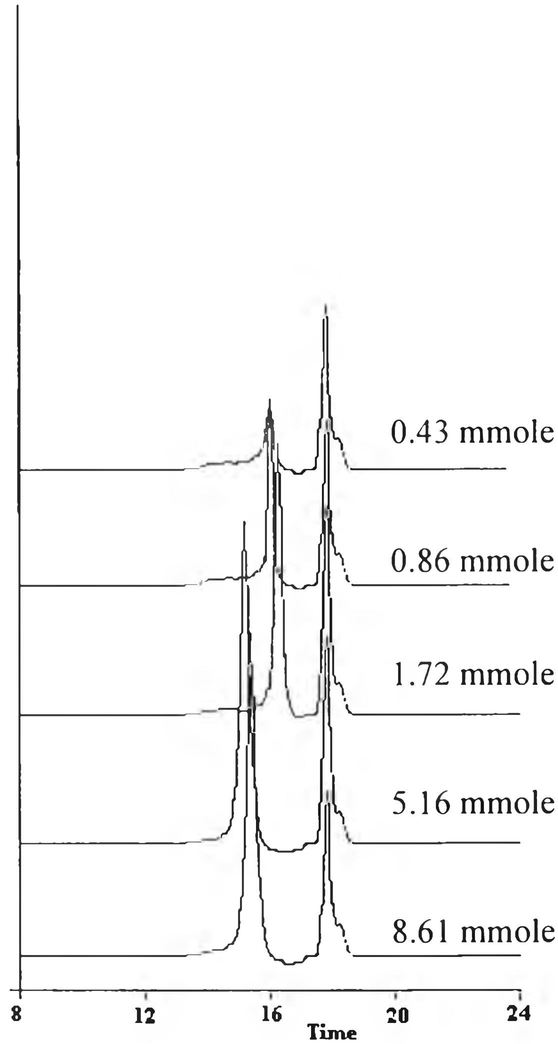

Figure II.2 Gel permeation chromatogram of deposited film with varying amount of photoinitiator.

II.3 Effect of deposition Time

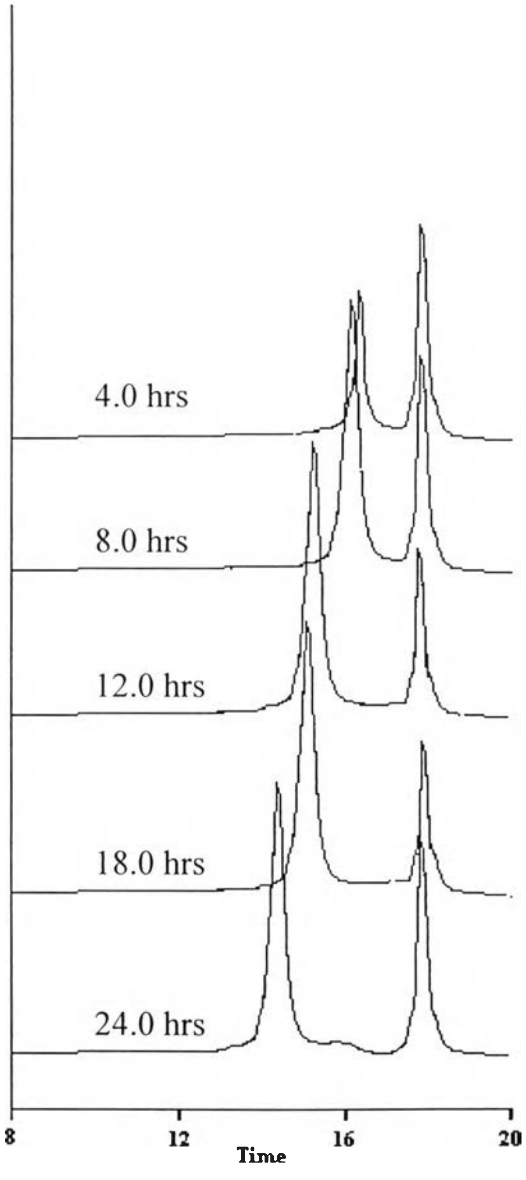

Figure II.3 Gel permeation chromatogram of deposited film at deposition time of 4.0 - 24.0 hours.

II.4 Effect of Flow Rate

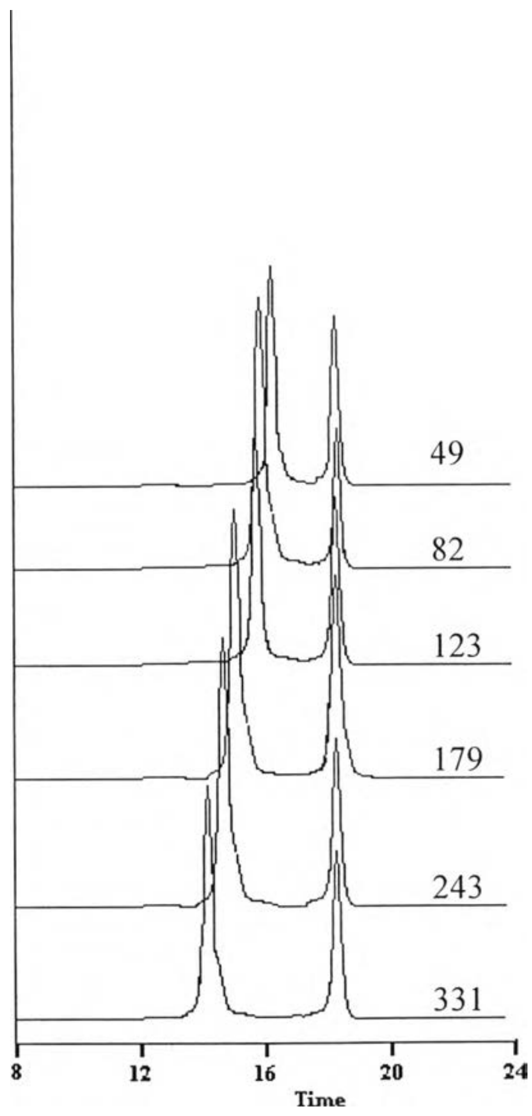

Figure II.4 Gel permeation chromatogram of deposited film at N_2 flow rate of 49 - 331 ml.N_2/min.

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