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APPENDIX A

NUCLEAR MAGNETIC RESONANCE SPECTRA

Nuclear magnetic resonance spectroscopy was used to determine the copolymer composition. The copolymer composition was investigated by the resonance signal area of ^{1}H-NMR spectra for each component shown as follows:

signal at 6.8-7.2 ppm due to aromatic protons of styrene

3.3-3.8 ppm due to OCH_2 protons of *n*-butyl acrylate and 2-ethylhexyl acrylate

The relative mole ratio of styrene/*n*-butyl acrylate and styrene/2-ethylhexyl acrylate was calculated from the ratio of characteristic signal area for each component divided by the number of protons per component molecule giving rise to the resonance. The results were shown in Table A-1 and A-2, respectively.

Table A-1 The mole ratio of styrene/*n*-butyl acrylate in the copolymer

St / BuA (mol %)	signal area at (ppm)		St / BuA (mol %)
in feed	3.3-3.8	6.8-7.2	in copolymer
95/5	2.5489	0.0534	95.1/4.9
90/10	2.5565	0.0903	91.9/8.1
85/15	2.5745	0.1553	86.9/13.1
80/20	2.4448	0.2030	82.8/17.2

Table A-2 The mole ratio of styrene/2-ethylhexyl acrylate in the copolymer

St / 2-EHA (mol %)	signal area at (ppm)		St / 2-EHA (mol %)
in feed	3.3-3.8	6.8-7.2	in copolymer
95/5	2.5535	0.0582	94.6/5.4
90/10	2.5724	0.1090	90.4/9.6
85/15	2.5615	0.1267	89.0/11.0
80/20	2.6230	0.2492	80.8/19.2

APPENDIX B

GEL PERMEATION CHROMATOGRAPHY

Average molecular weights and molecular weight distribution of the copolymer were measured by gel permeation chromatography. This technique uses a bed of cross-linked polystyrene-divinylbenzene gel for the seperation of the polymer taking place in the voids present in the gel particles. The pore volume is available to smaller molecules. This makes the path traveled by the larger molecules shorter than that of the small molecules, and they (the former) are eluted from the column first, because the sorting process takes place on the basis of molecular size, a true size distribution of the polymer species takes place.

Before analysis of the copolymer, the standard calibration curve was set up using standard polystyrene (S-66.0) supplied by Showa denko. The calibration data and calibration curve were shown in Table B-1 and Figure B-1, respectively.

Table B-1 The calibration data of Shodex polystyrene standard S-66.0

Average Molecular Weights	Retention Times, min.
560,000	15.782
156,000	17.198
28,500	19.100
11,600	20.060
2,950	21.258

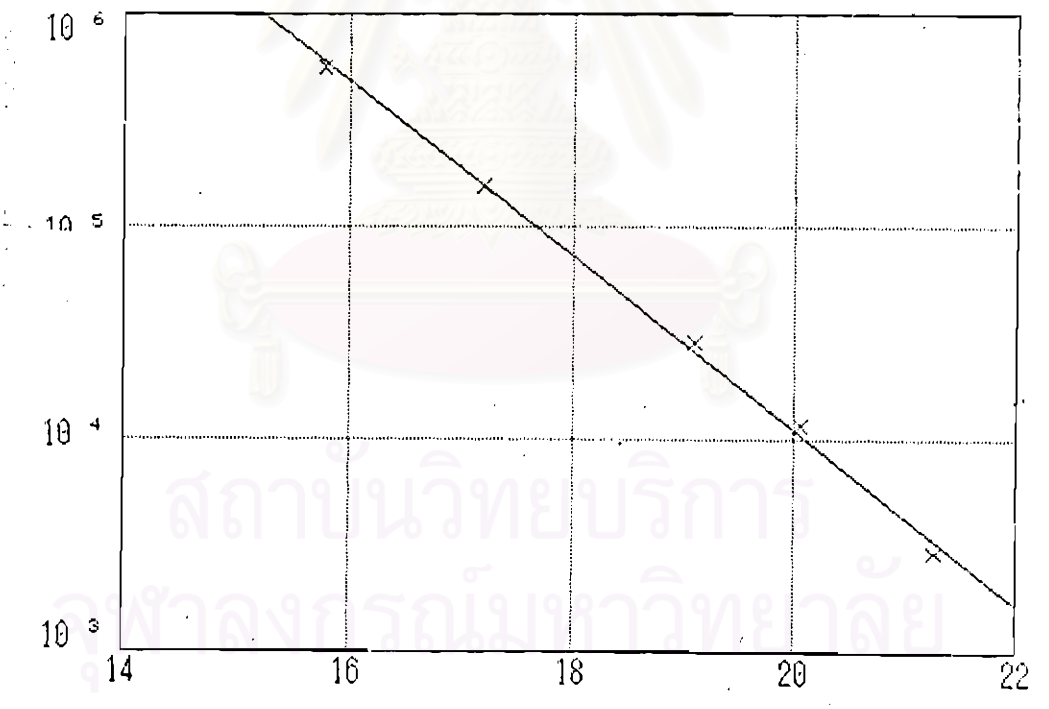

Figure B-1 The calibration curve of Shodex polystyrene standard S-66.0

VITA

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