APPENDIXES

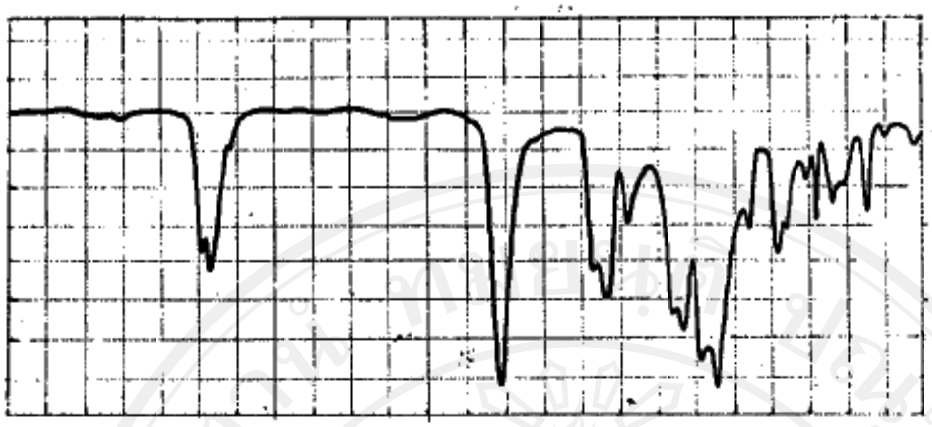

Figure 3.1 Infrared spectrum of poly(methyl methacrylate)from 1,2-dichloroethane film(free radical copolymerisation).

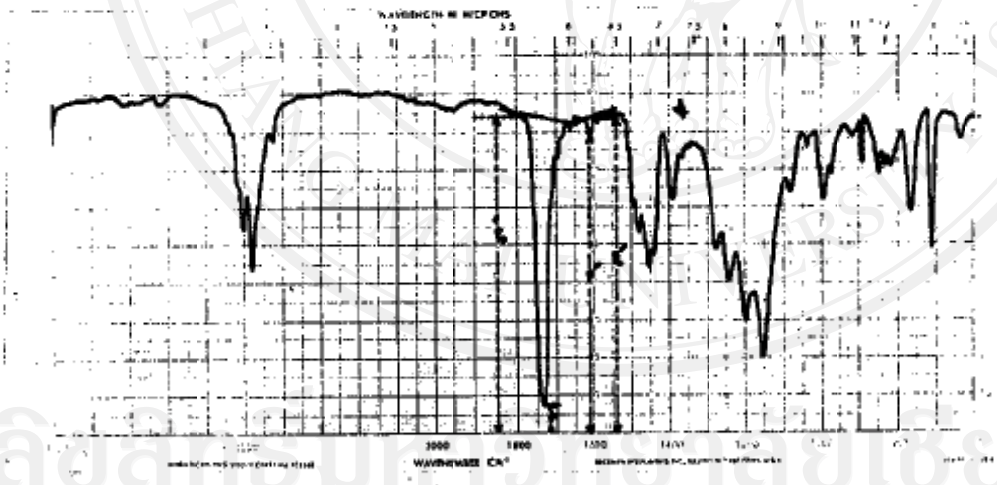

Figure 3.2 Infrared spectrum of MMA-ST copolymer(80:20)from 1,2-dichloroethane film(free radical copolymerisation).

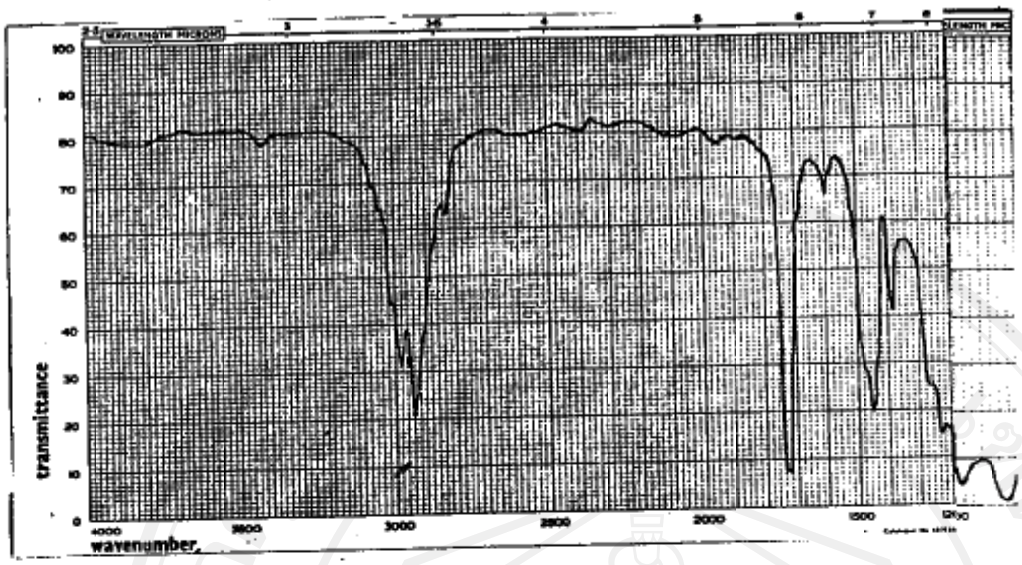

Figure 3.3 Infrared spectrum of MMA-ST copolymer(75:25)from 1,2-dichloroethane film(free radical copolymerisation).

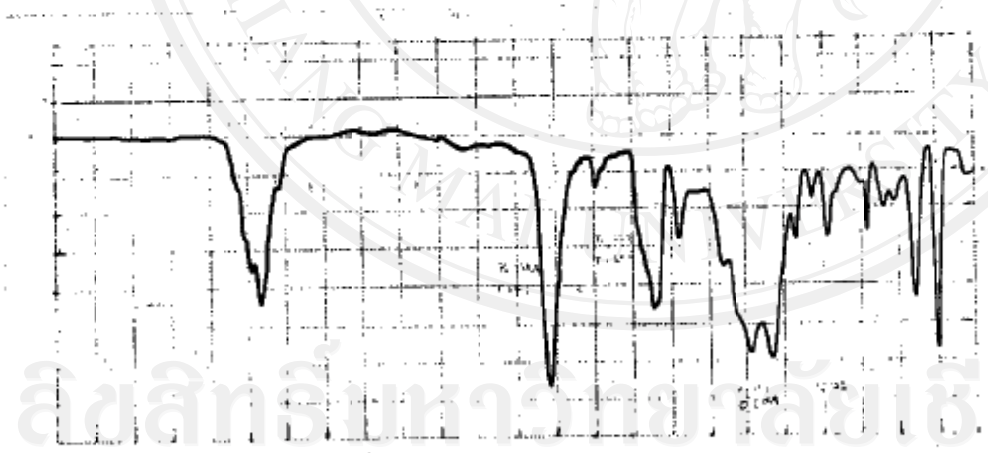

Figure 3.4 Infrared spectrum Of MMA-ST copolymer(60:40)from 1,2-dichloroethane film(free radical copolymerisation).

Figure 3.5 Infrared spectrum of MMA-ST copolymer(50:50)from 1,2-dichloroethane film(free radical copolymerisation).

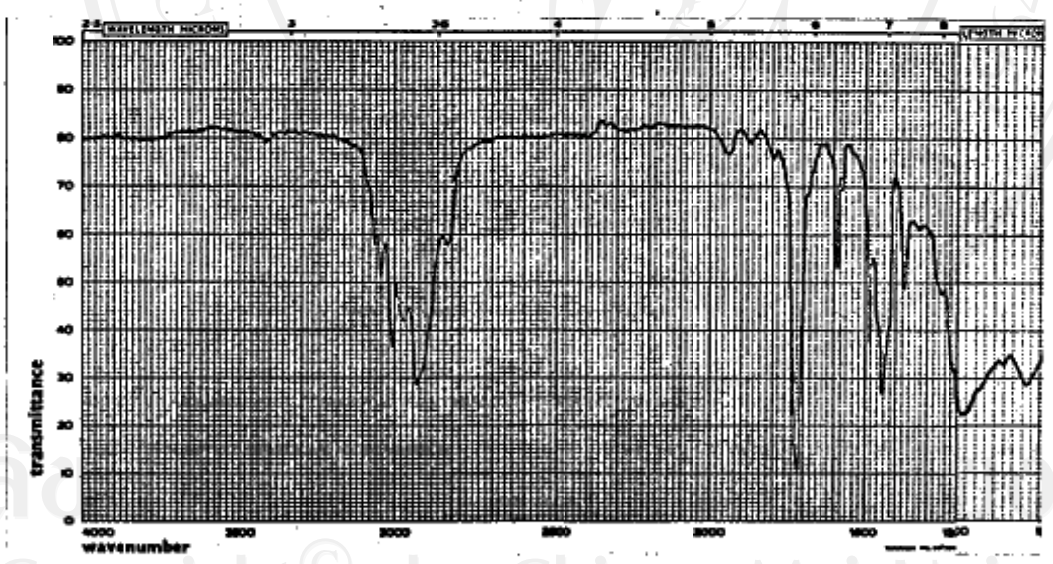

Figure 3.6 Infrared spectrum of MMA-ST copolymer(40:60)from 1,2-dichloroethane film(free radical copolymerisation).

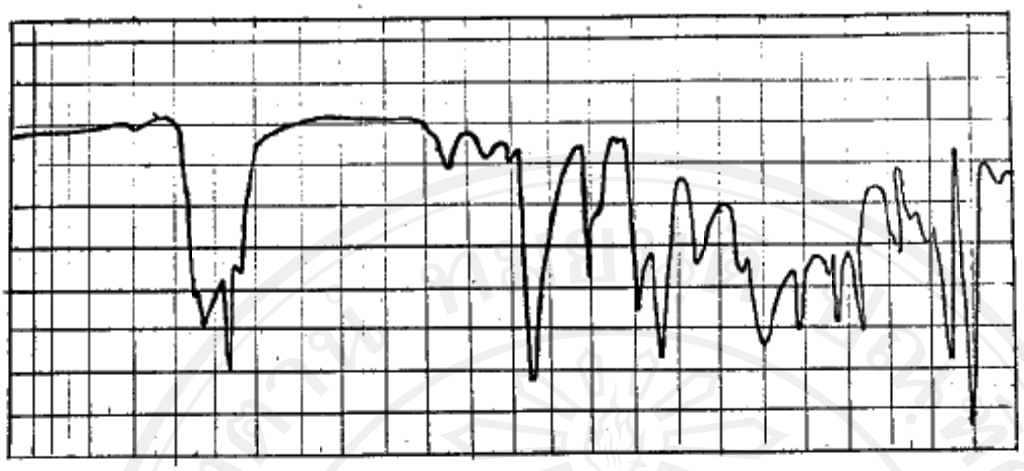

Figure 3.7 Infrared spectrum of MMA-ST(copolymer(20:80)from 1,2-dichloroethane film(free radical copolymerisation).

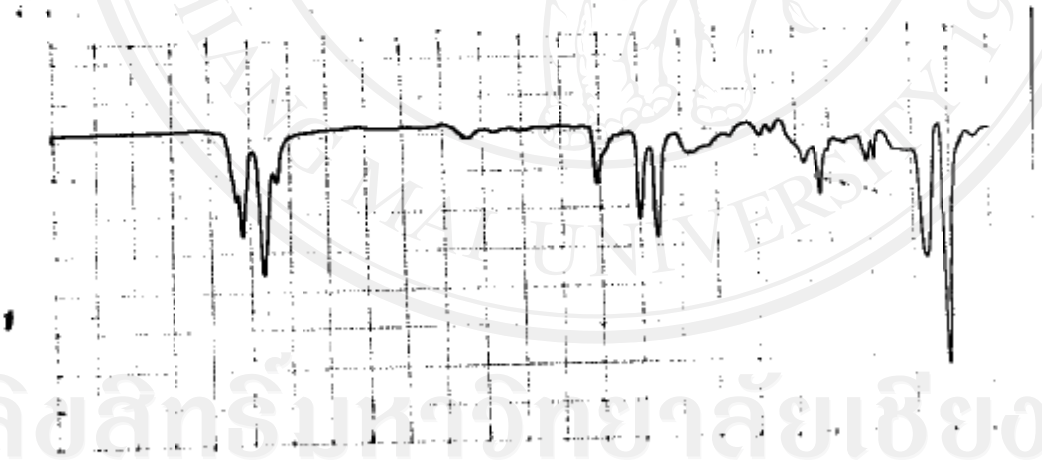

Figure 3.8 Infrared spectrum of polystyrene from 1,2-dichloroethane film(free radical copolymerisation).

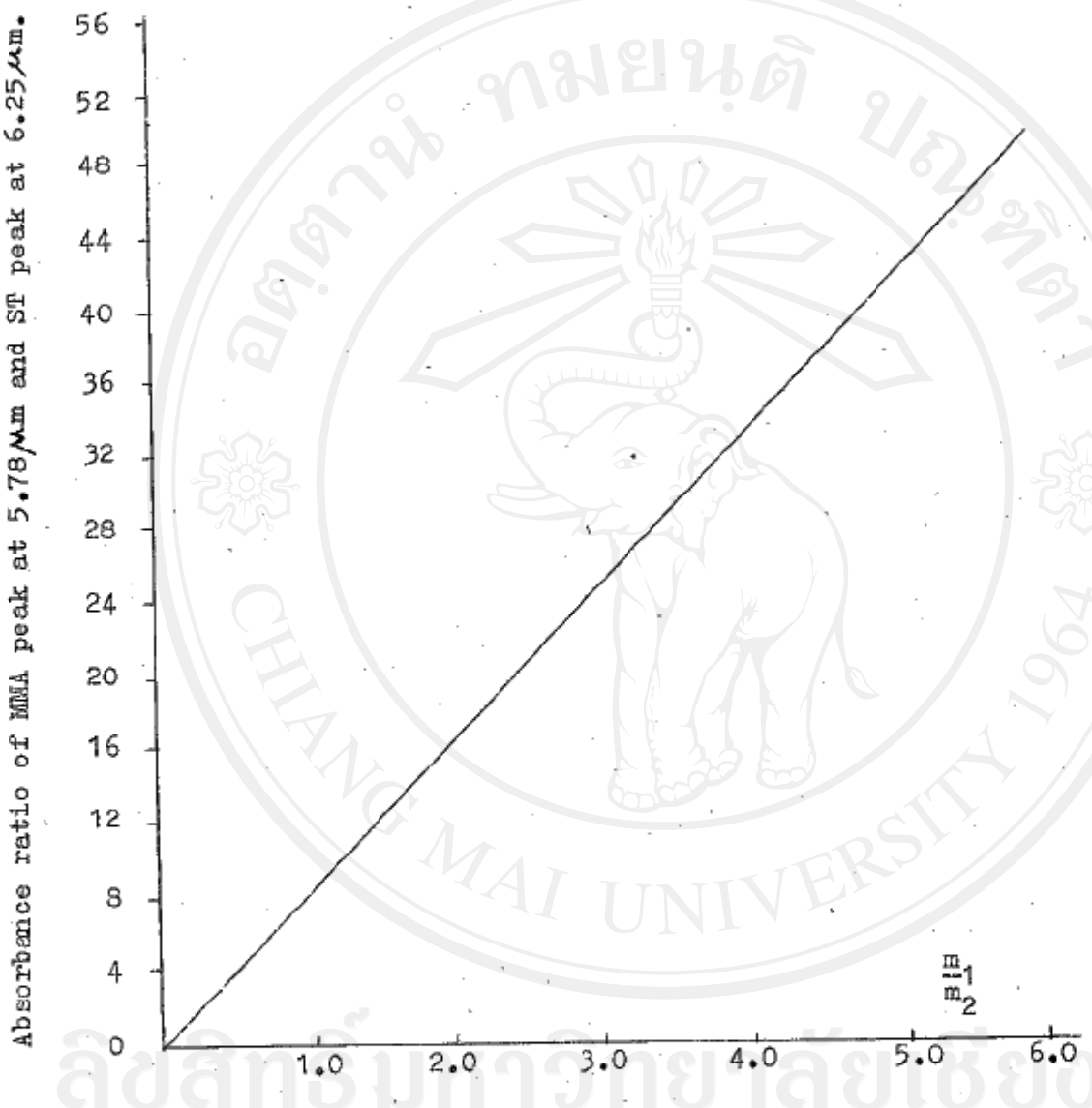

Fig. 3.9 Plot of copolymer composition ratio of MMA and ST (m_1/m_2) against absorbance ratio of MMA at 5.8 μm and ST at 6.25 μ m.

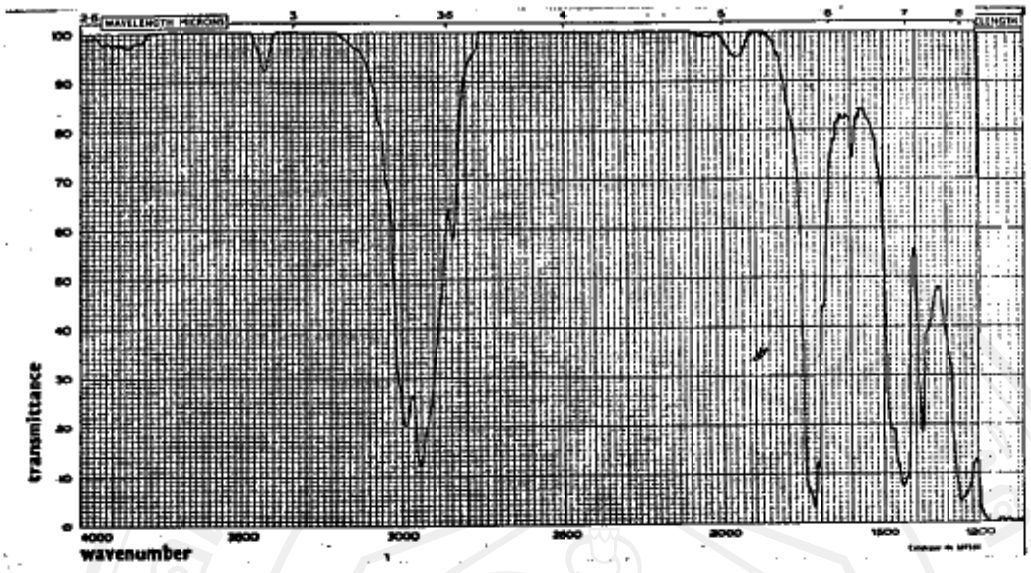

Figure 3.10 Infrared spectrum of MMA-ST copolymer(1:9 ml/ml)from 1,2-dichloroethane film(anionic copolymerisation).

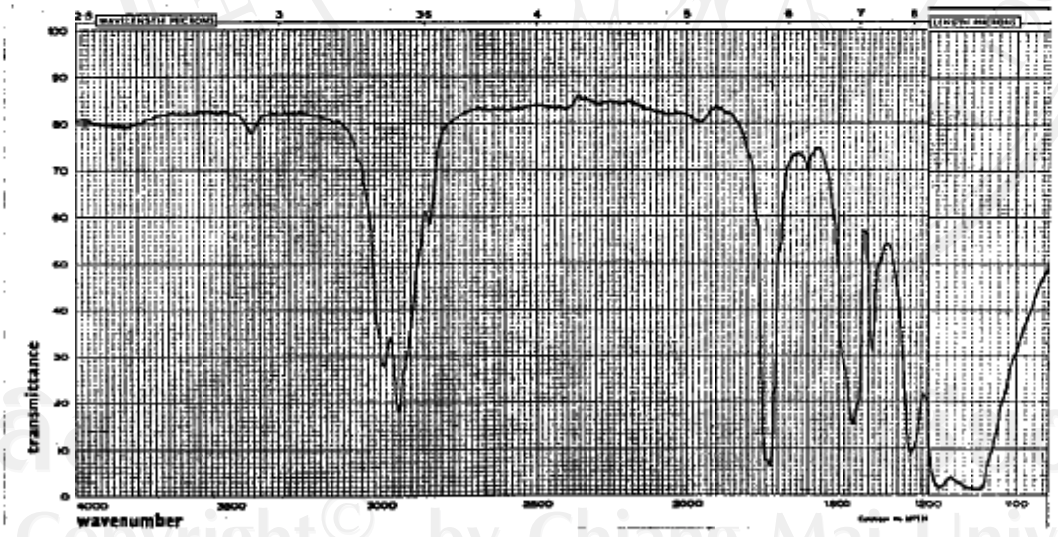

Figure 3.11 Infrared spectrum of MMA-ST copolymer(3:7 ml/ml)from 1,2-dichloroethane film(anionic copolymerisation).

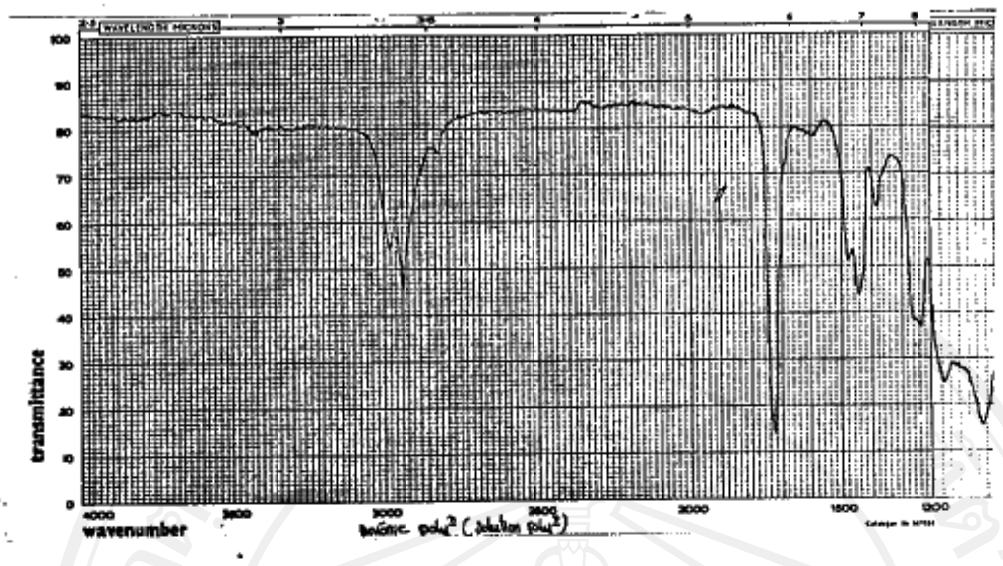

Figure 3.12 Infrared spectrum of MMA-ST copolymer(5:5 ml/ml)from 1,2-dichloroethane film(anionic copolymerisation).

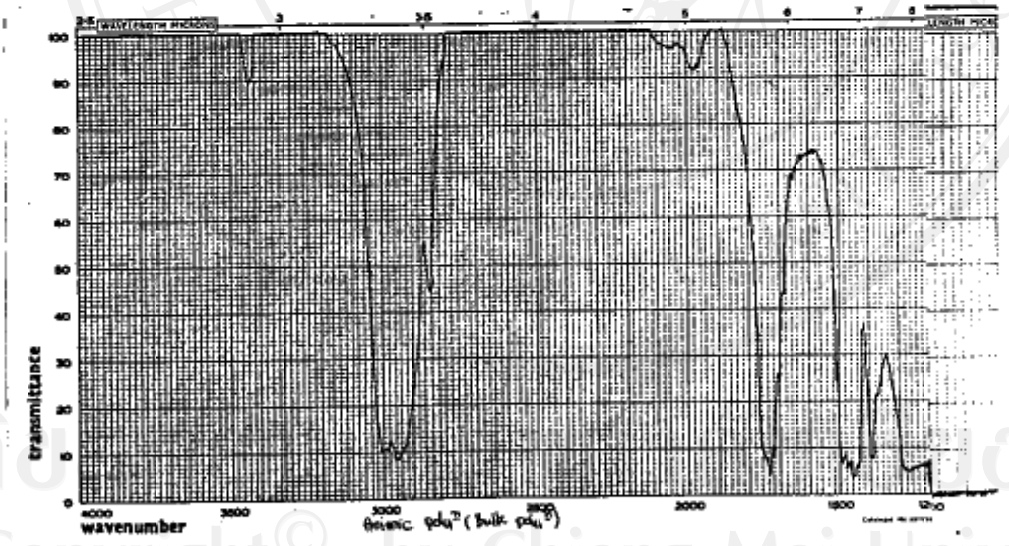

Figure 3.13 Infrared spectrum of MMA-ST copolymer(7:3 ml/ml)from 1,2-dichloroethane film(anionic copolymerisation).

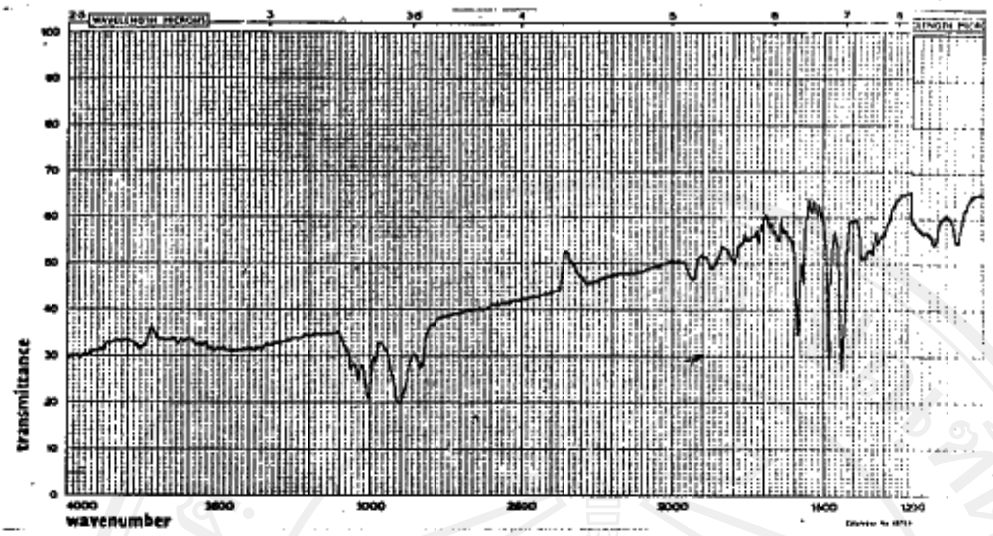

Figure 3.14 Infrared spectrum of MMA-ST copolymer(1.5:3.5 ml/ml) from KBr disc(cationic copolymerisation).

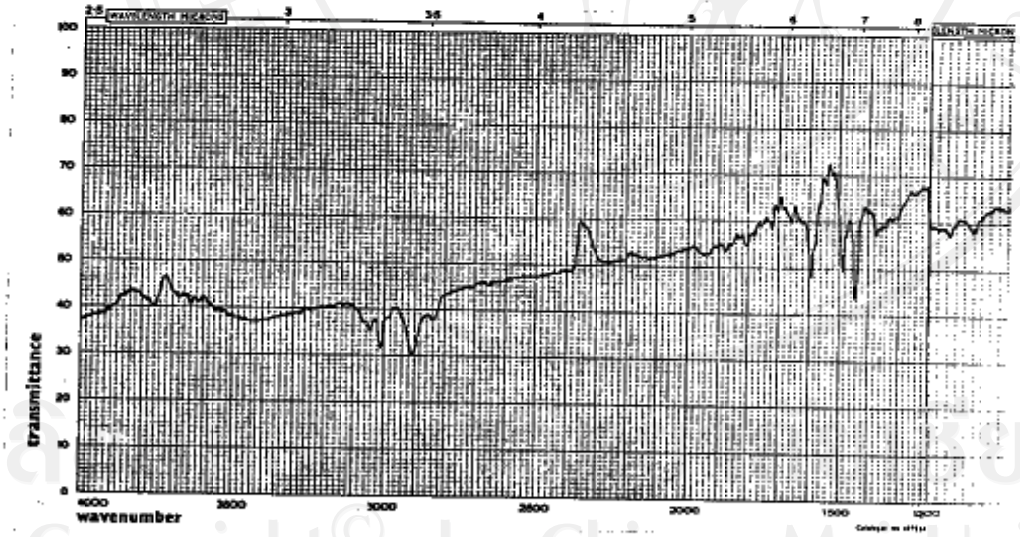

Figure 3.15 Infrared spectrum of MMA-ST copolymer(2.5:2.5 ml/ml) from KBr disc(cationic copolymerisation).

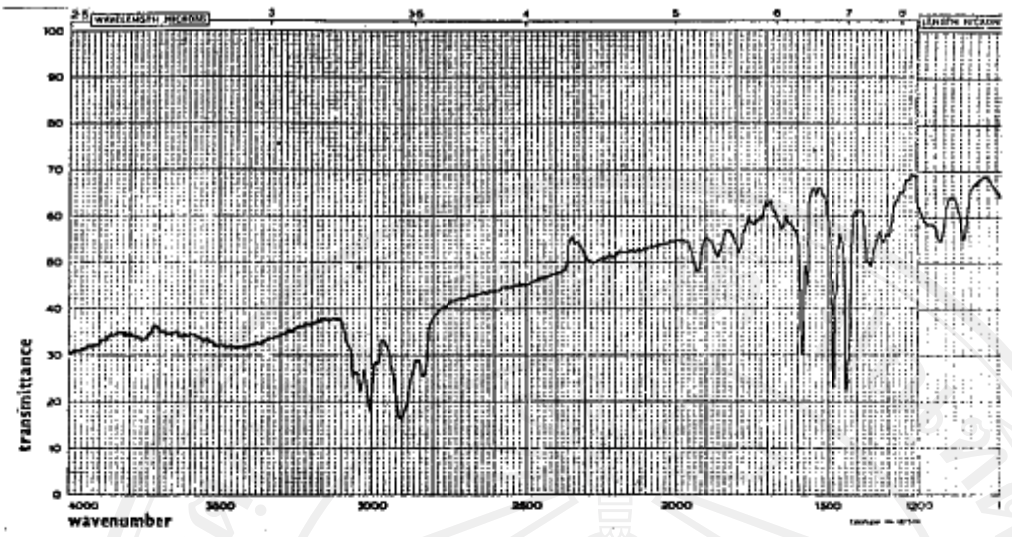

Figure 3.16 Infrared spectrum of MMA-ST copolymer(3.5:1.5 ml/ml) from KBr disc(cationic copolymerisation).

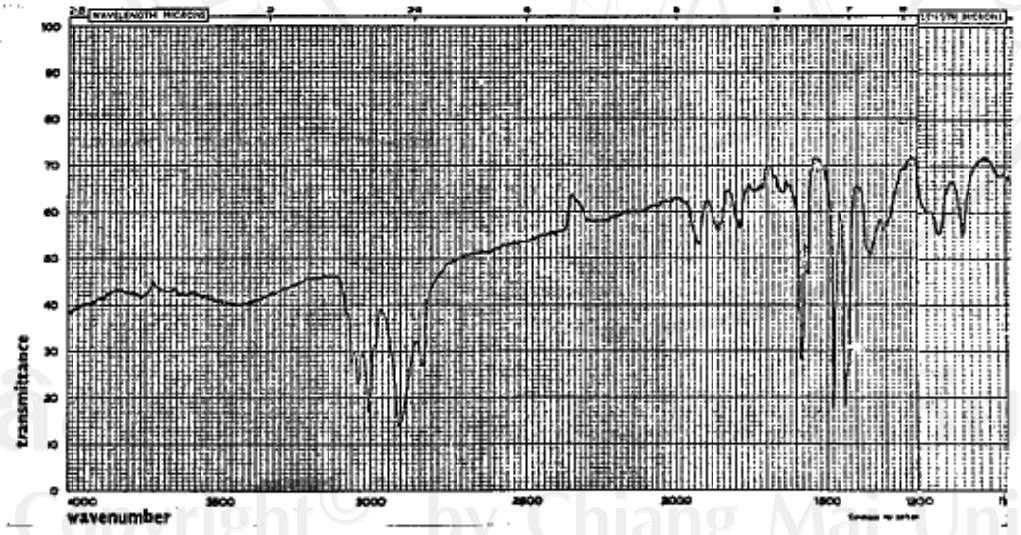

Figure 3.17 Infrared spectrum of MMA-ST copolymer(4:1 ml/ml)from KBr disc(cationic copolymerisation).

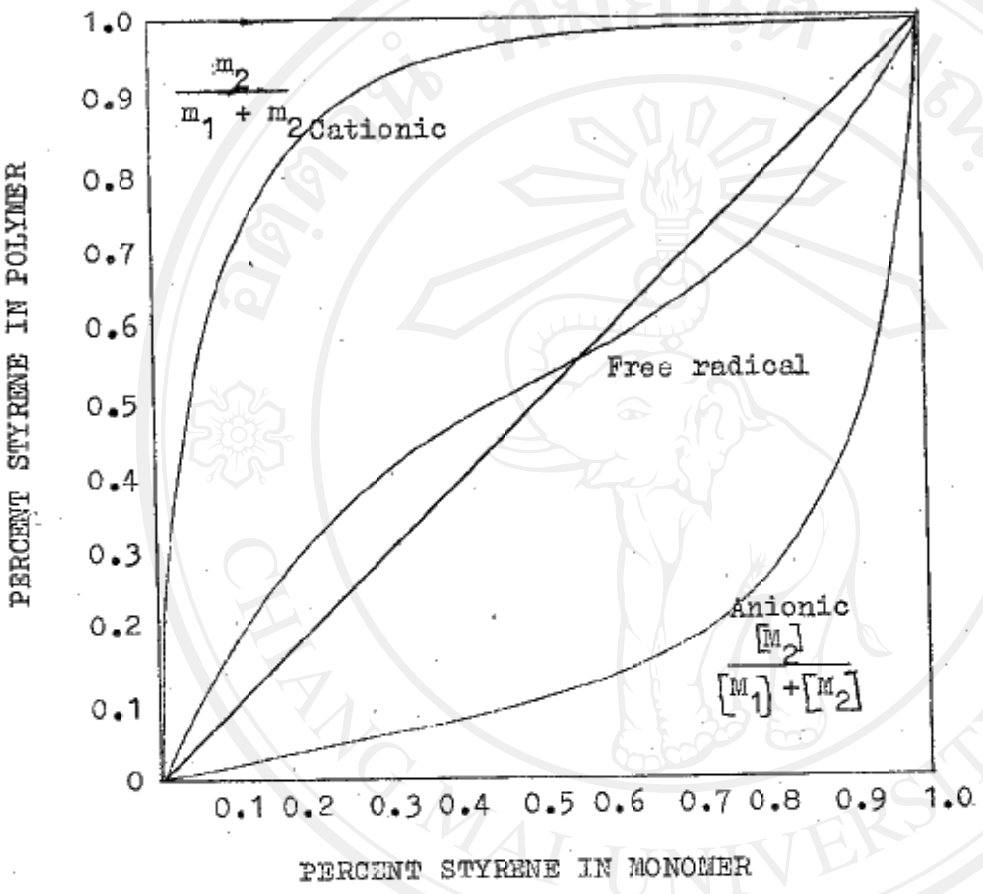

Fig. 3.18 Composition of copolymer as a function of monomer composition for methyl methacrylate-styrene.

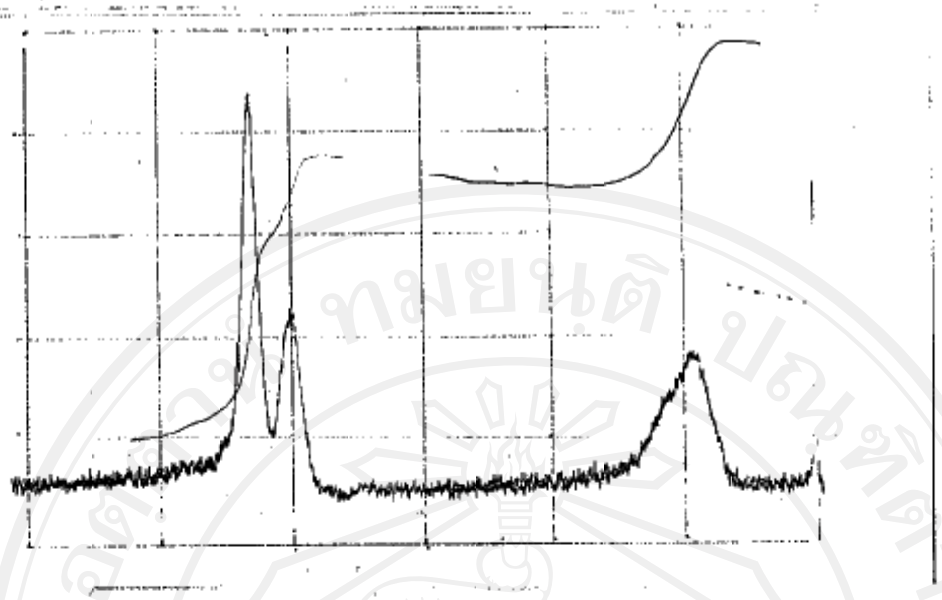

Figure 3.19 NMR spectrum of polystyrene(free radical polymerisation) at 60 MHz in CCl_4 at room temperature.

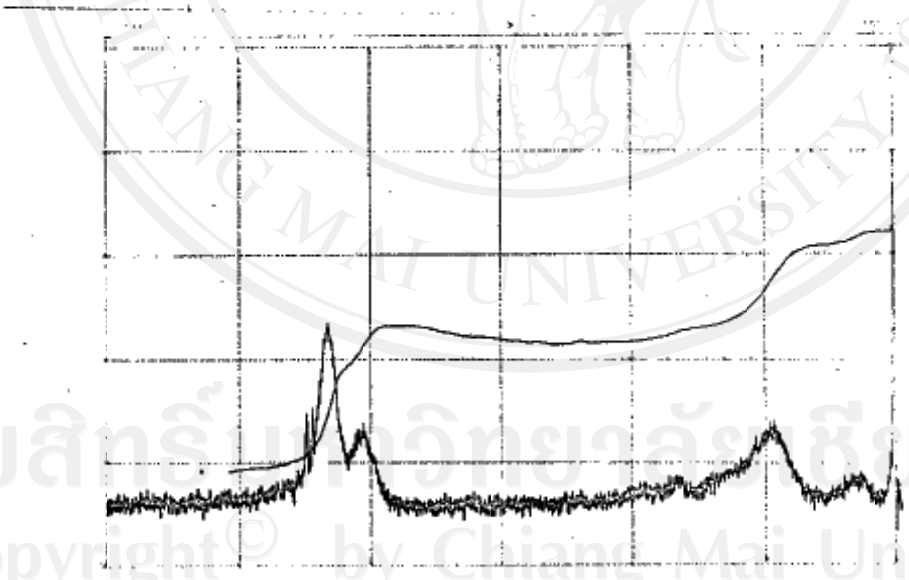

Figure 3.20 NMR spectrum of MMA-ST copolymer(20:80) (free radical copolymerisation) at 60 MHz in CCl_4 at room temperature.

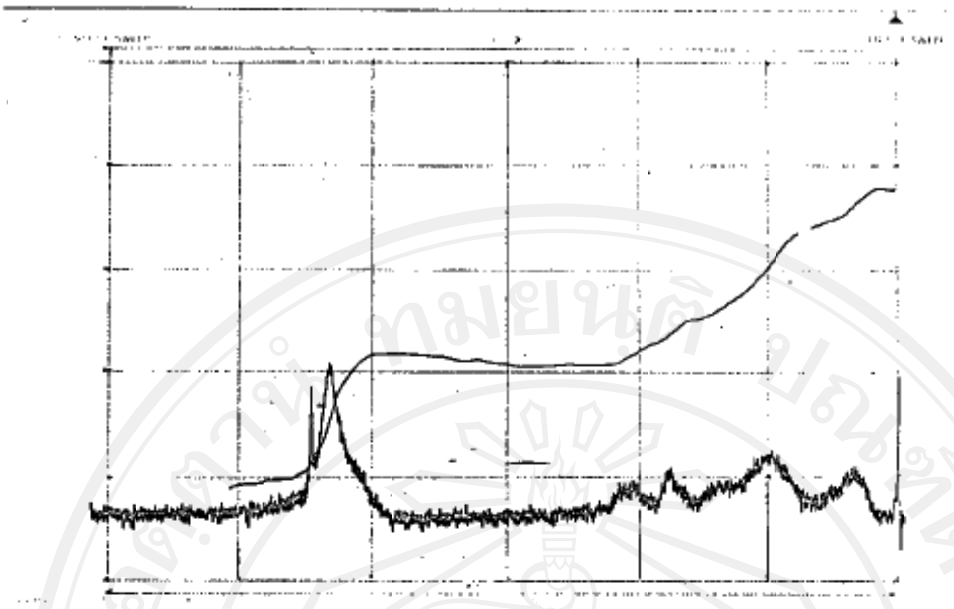

Figure 3.21 NMR spectrum of MMA-ST copolymer(40:60) (free radical copolymerisation) at 60 MHz in CCl_4 at room temperature).

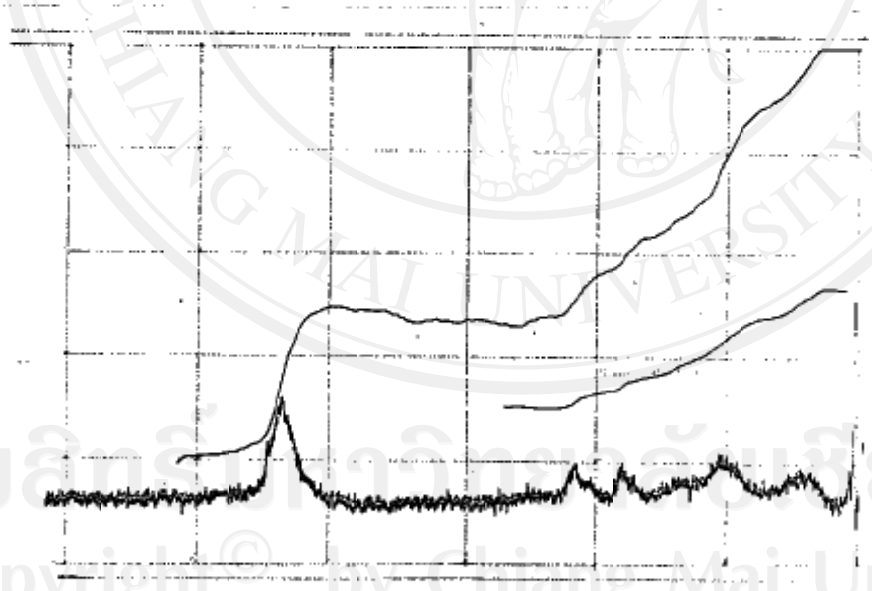

Figure 3.22 NMR spectrum of MMA-ST copolymer(50:50) (free radical copolymerisation) at 60 MHz in CCl_4 at room temperature.

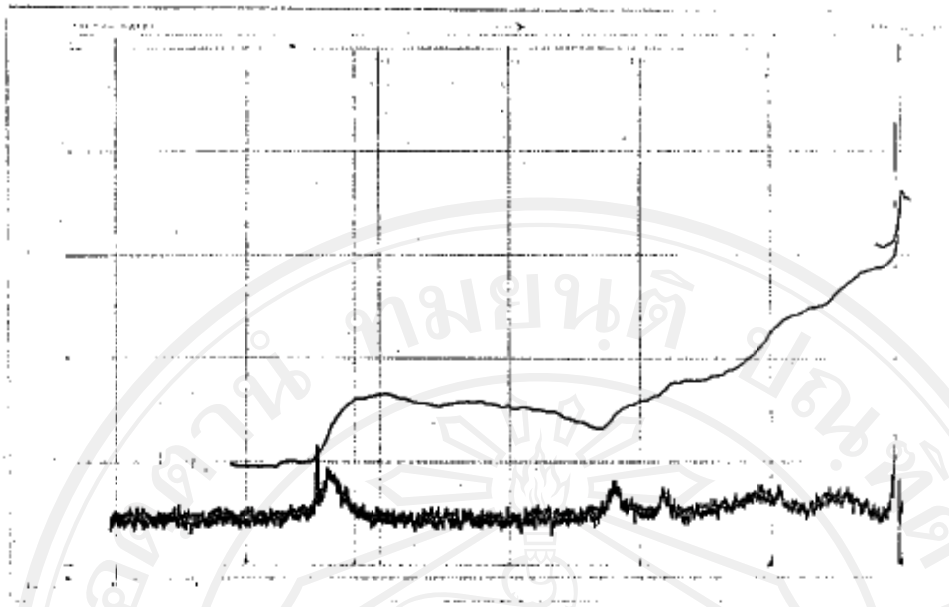

Figure 3.23 NMR spectrum of MMA-ST copolymer(60:40) (free radical copolymerisation) at 60 MHz in CCl_4 at room temperature.

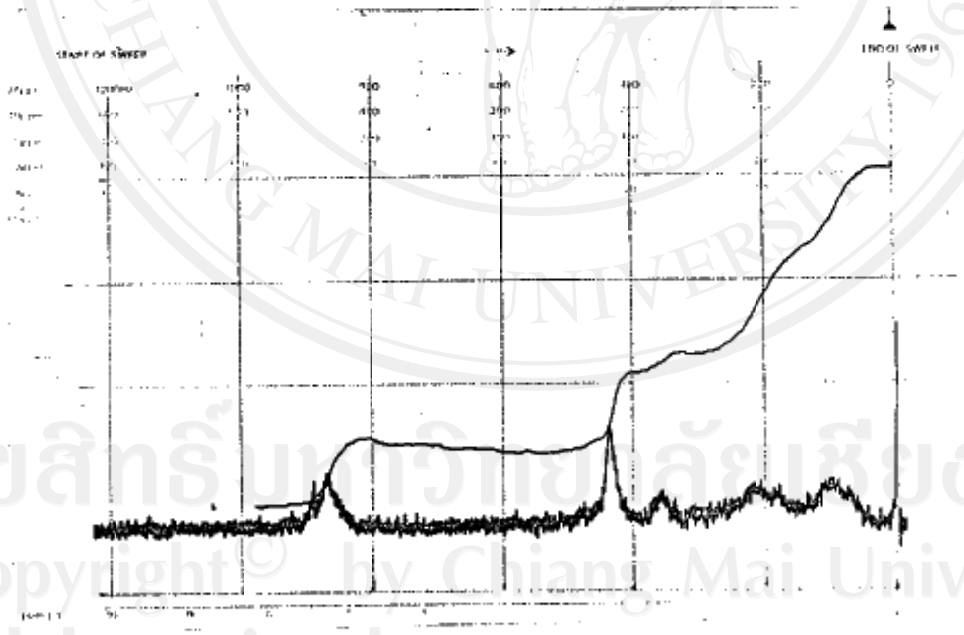

Figure 3.24 NMR spectrum of MMA-ST copolymer(75:25) (free radical copolymerisation) at 60 MHz in CCl_4 at room temperature.

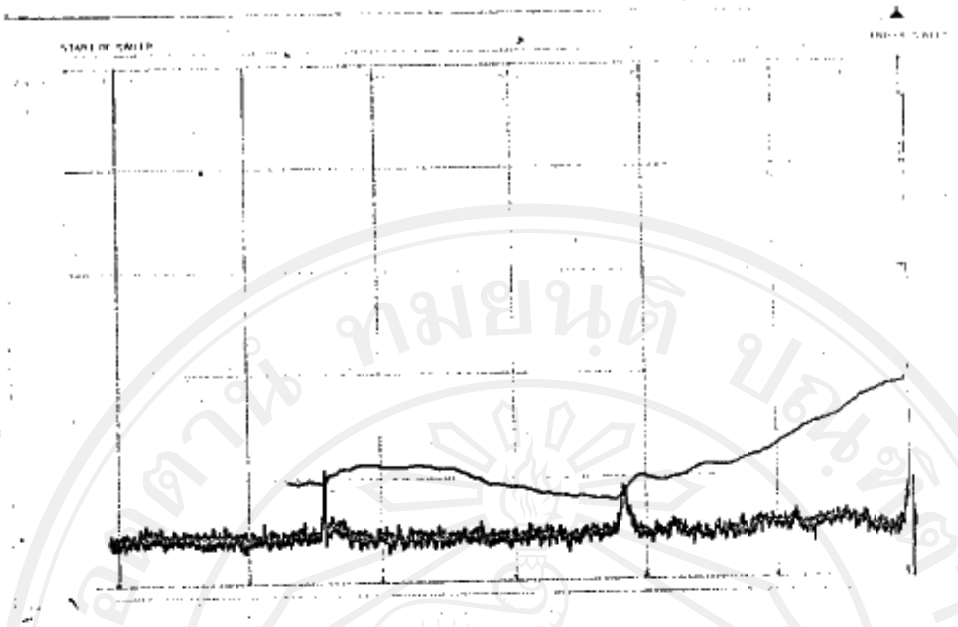

Figure 3.25 NMR spectrum of MMA-ST copolymer(80:20) (free radical copolymerisation) at 60 MHz in CCl_4 at room temperature.

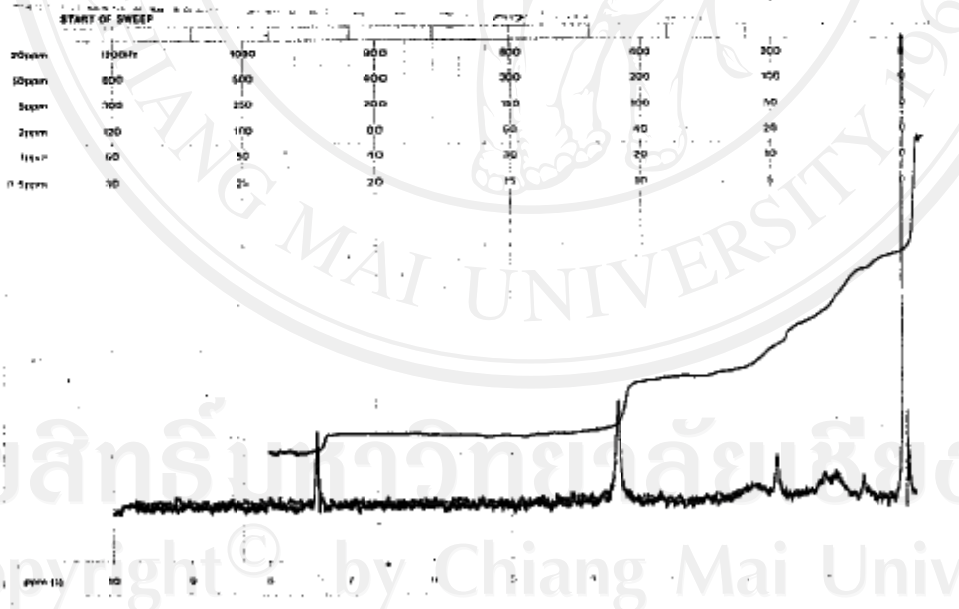

Figure 3.26 NMR spectrum of poly(methyl methacrylate) (free radical polymerisation) at 60 MHz in CCl_4 at room temperature.

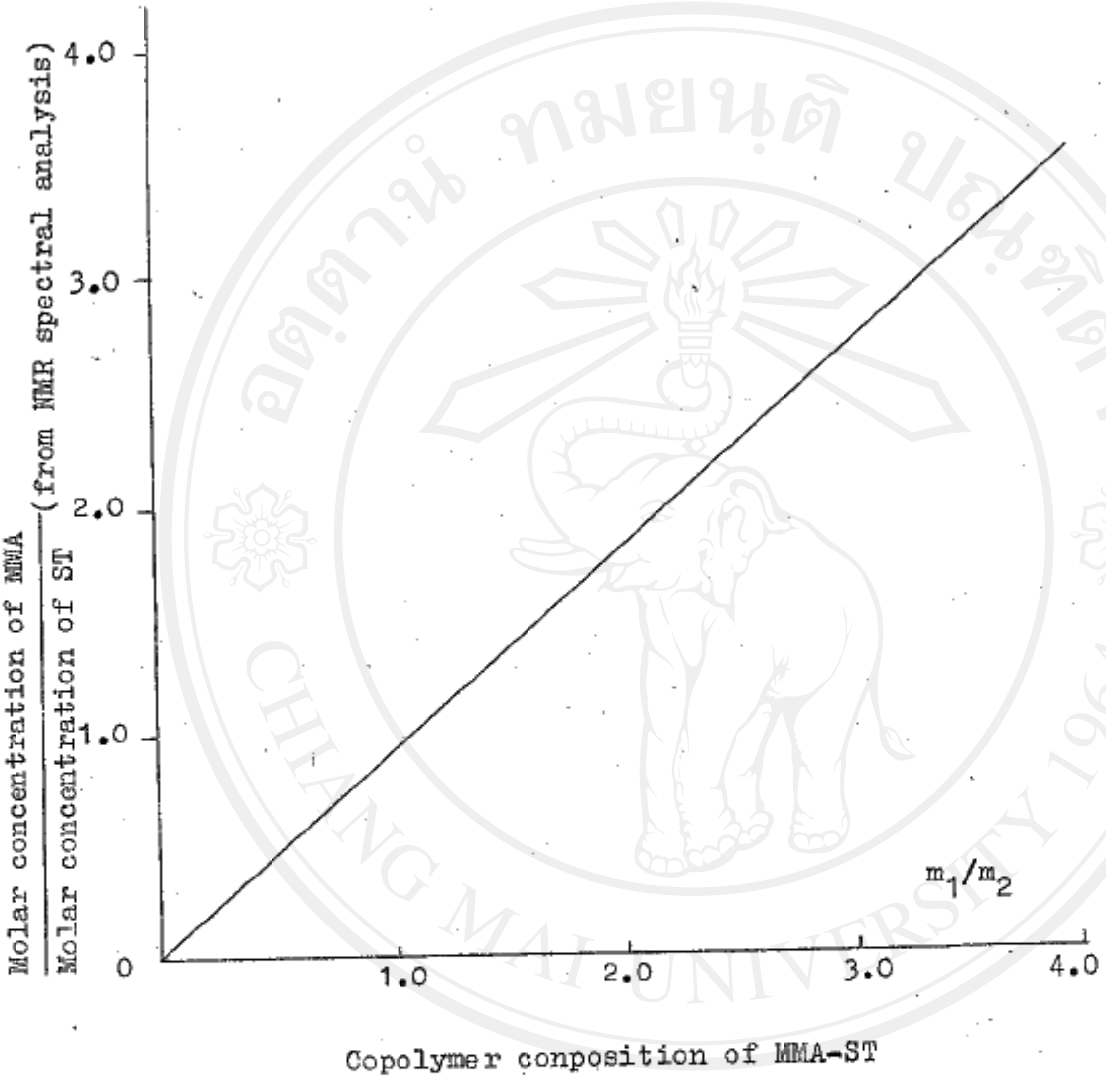

Fig. 3.27 Plot of copolymer composition of MMA-ST (from the copolymer composition equation) against the ratios of molar concentration of MMA-ST prepared copolymers (from NMR spectral analysis).

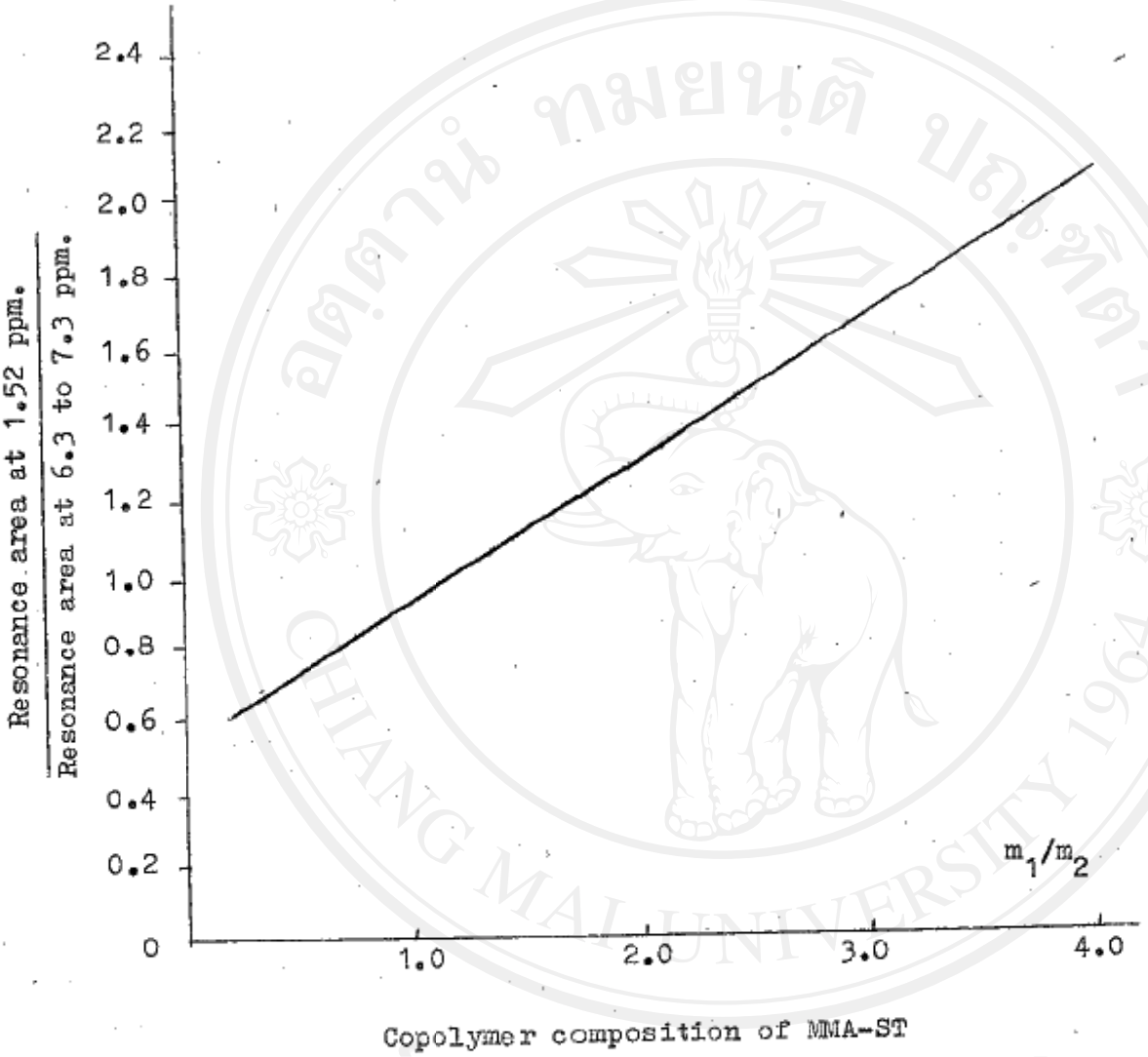

Fig. 3.28 Plot of copolymer composition of MMA-ST against the NMR resonance area at 1.52 ppm. and 6.3 ppm. to 7.3 ppm.

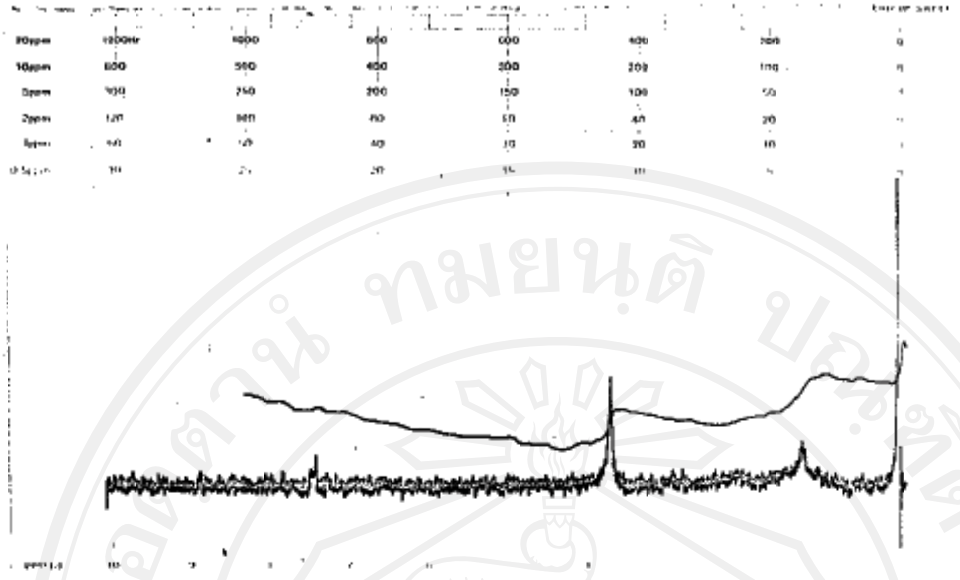

Figure 3.29 NMR spectrum of MMA-ST copolymer(7:3 ml/ml) (anionic copolymerisation) at 60 MHz in CCl_4 at room temperature.

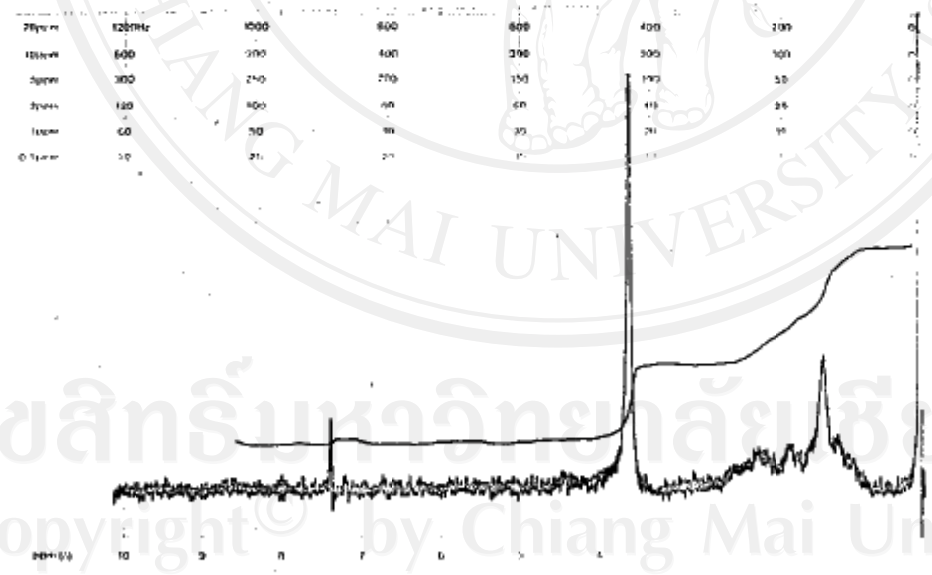

Figure 3.30 NMR spectrum of MMA-ST copolymer(5:5 ml/ml) (anionic copolymerisation) at 60 MHz in CCl_4 at room temperature.

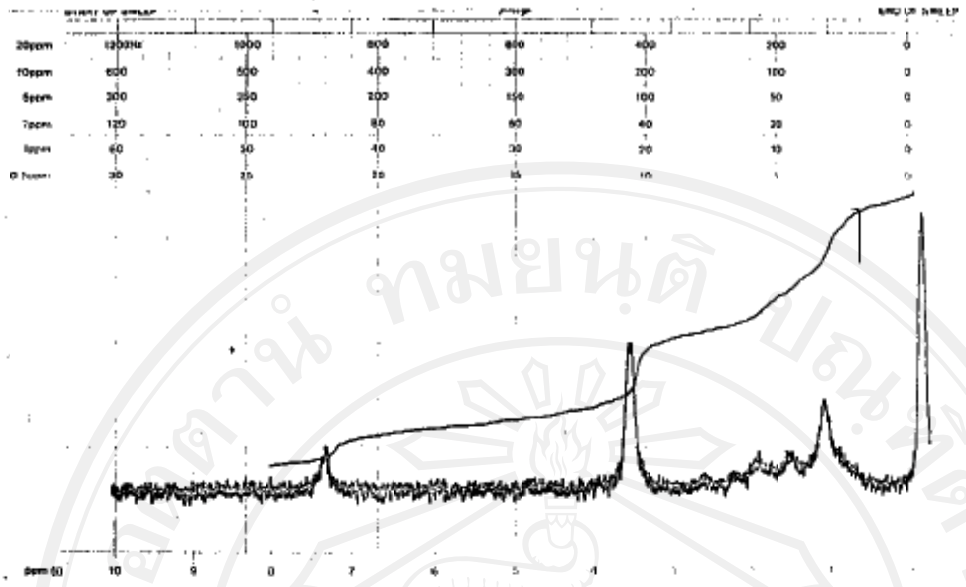

Figure 3.31 NMR spectrum of MMA-ST copolymer(3:7 ml/ml) (anionic copolymerisation) at 60 MHz in $CDCl_3$ at room temperature.

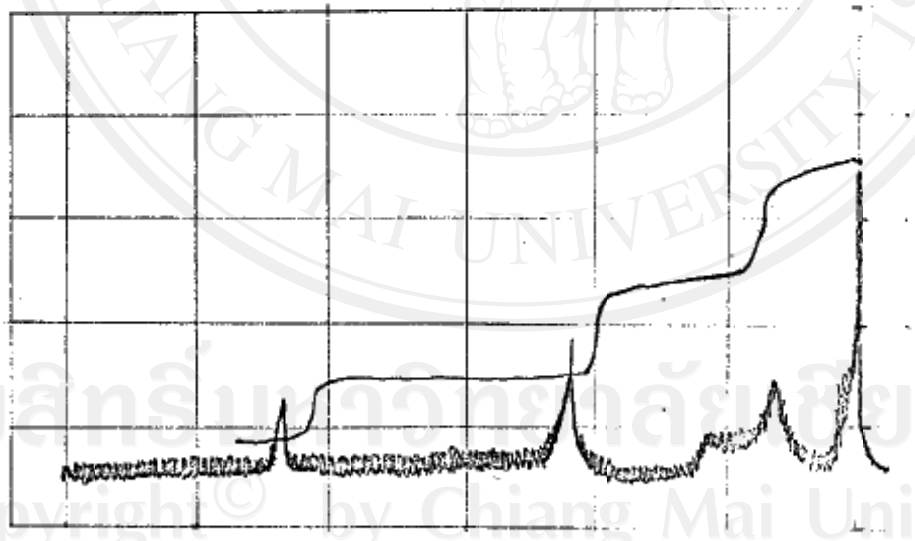

Figure 3.32 NMR spectrum of MMA-ST copolymer(1:9 ml/ml) (anionic copolymerisation) at 60 MHz in CCl_4 at room temperature.

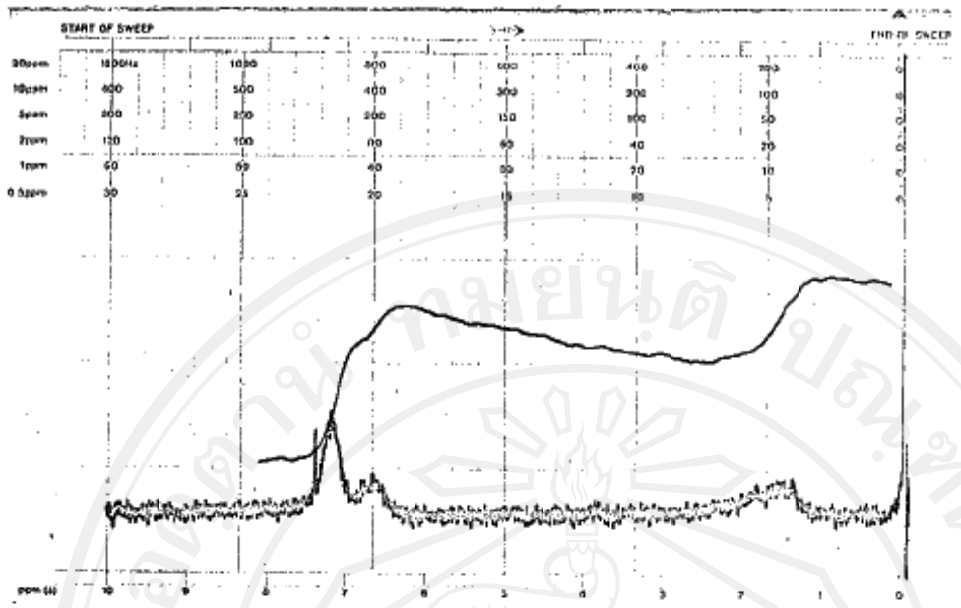

Figure 3.33 NMR spectrum of MMA-ST copolymer(4:1 ml/ml)(cationic copolymerisation) at 60 MHz in CCl_4 at room temperature.

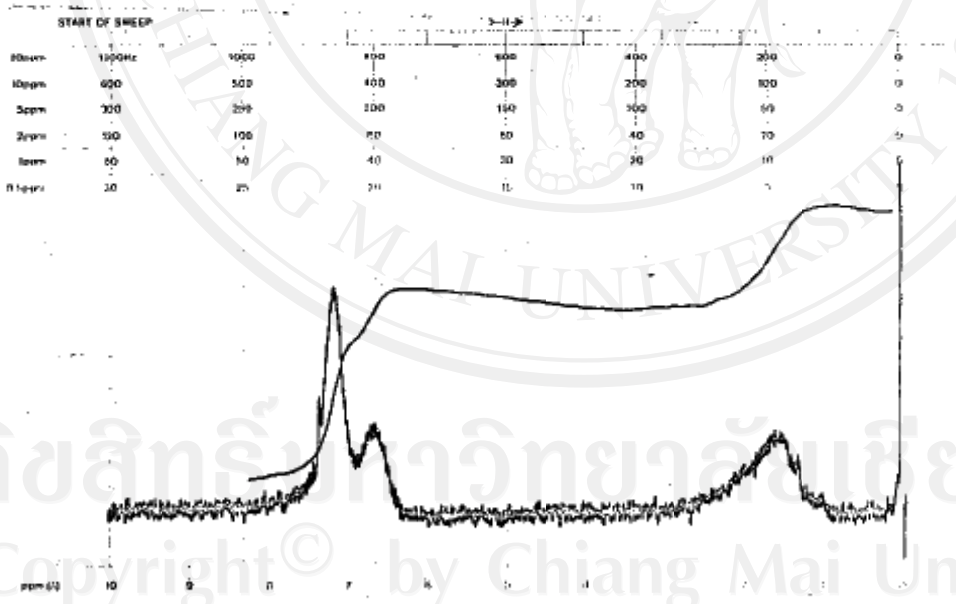

Figure 3.34 NMR spectrum of MMA-ST copolymer(3.5:1.5 ml/ml) (cationic copolymerisation) at 60 MHz in CCl_4 at room temperature.

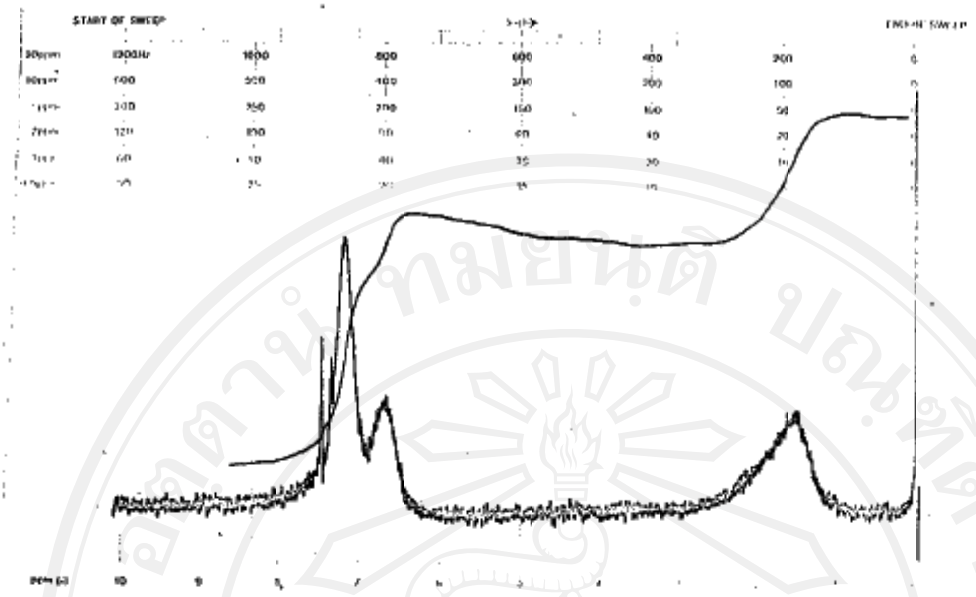

Figure 3.35 NMR spectrum of MMA-ST copolymer(2.5:2.5 ml/ml) (cationic copolymerisation) at 60 MHz in CCl_4 at room temperature.

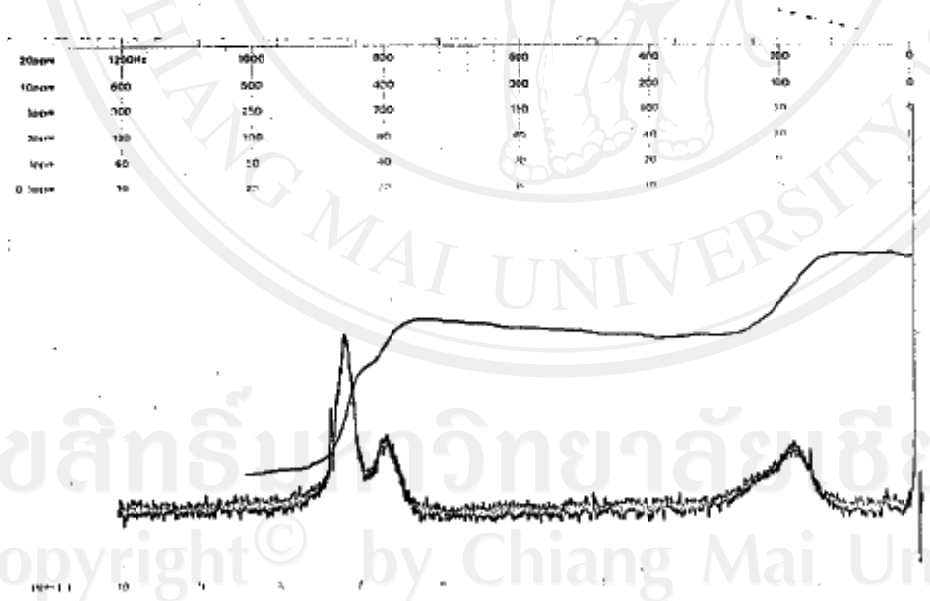

Figure 3.36 NMR spectrum of MMA-ST copolymer(1.5:3.5 ml/ml) (cationic copolymerisation) at 60 MHz in CCl_4 at room temperature.

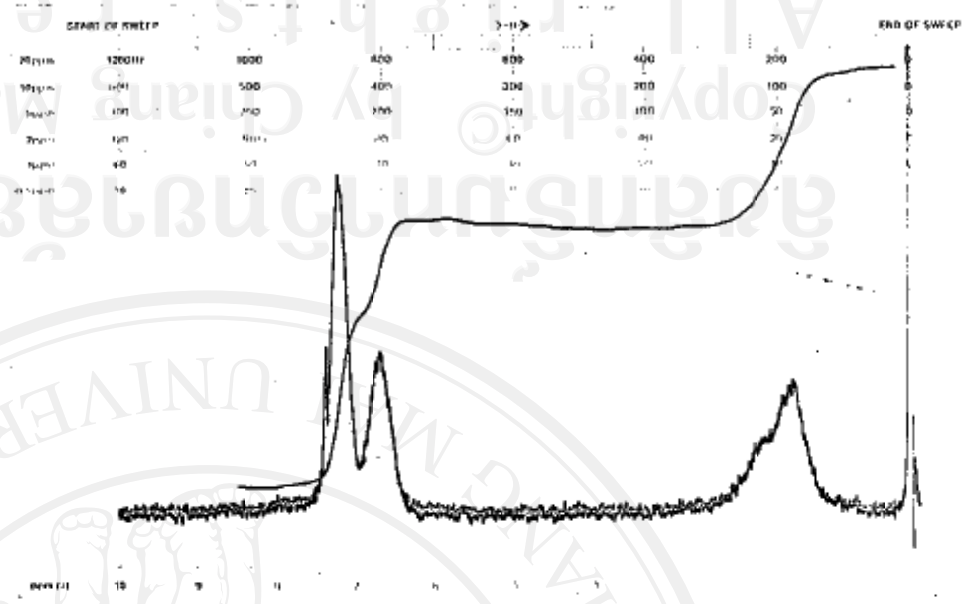

Figure 3.37 NMR spectrum of polystyrene (free radical polymeria
at 60 MHz in $CDCl_3$ at romm temperature.

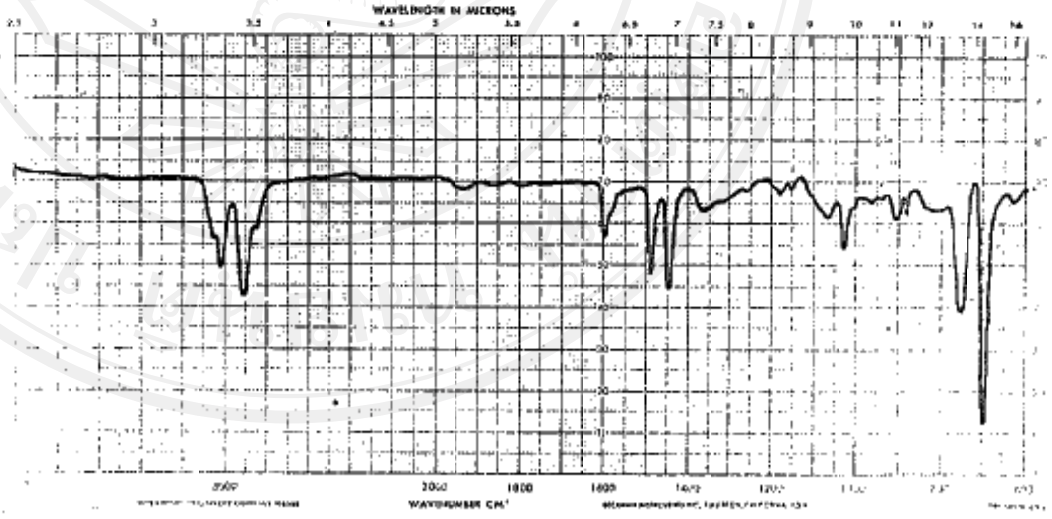

Figure 3.38 Infrared spectrum of polystyrene from 1,2-dichloroe
film(free radical polymerisation).

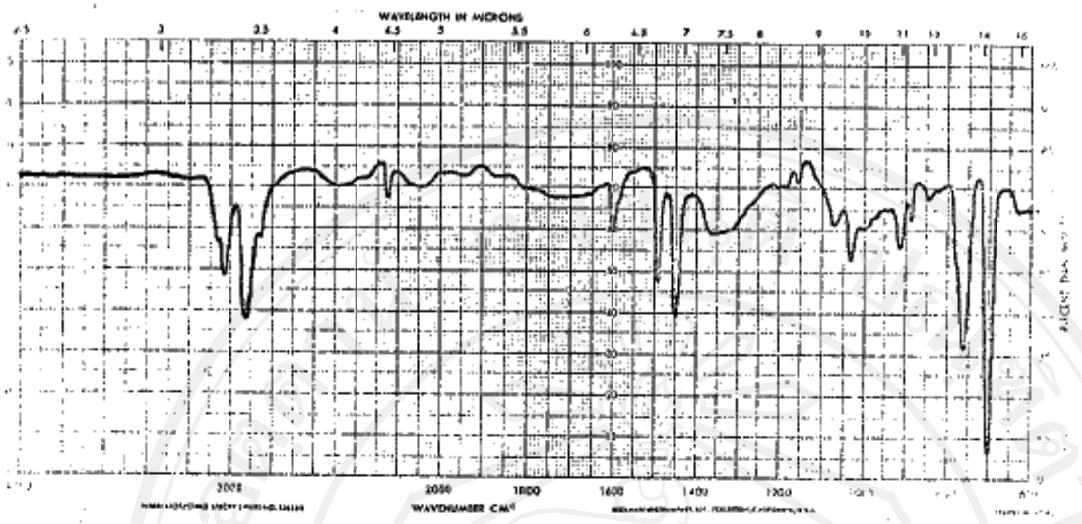

Figure 3.39 Infrared spectrum of ACN-ST copolymer(20:80)from 1,2-dichloroethane film(free radical copolymerisation).

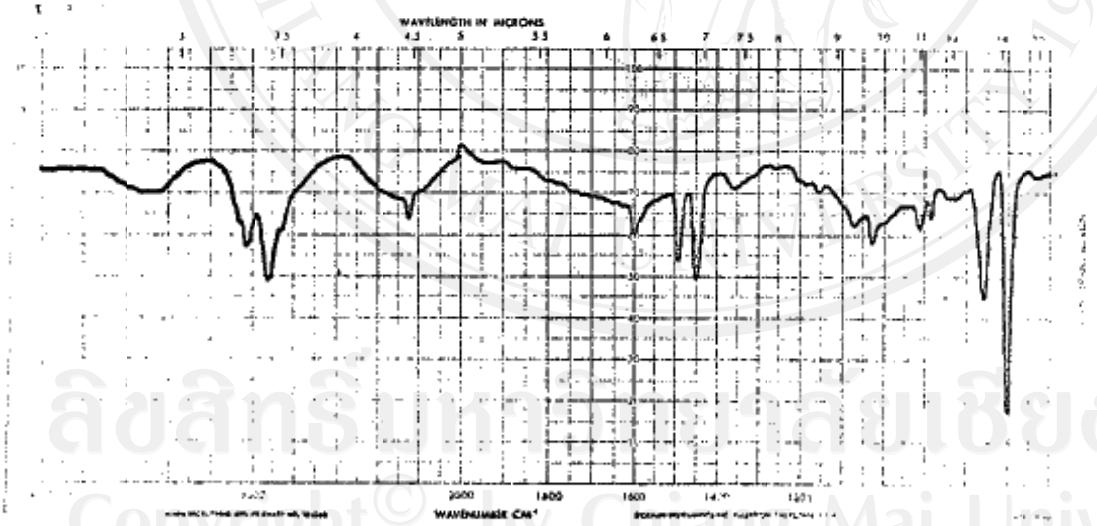

Figure 3.40 Infrared spectrim of ACN-ST copolymer(25:75)from 1,2-dichloroethane film(free radical copolymerisation).

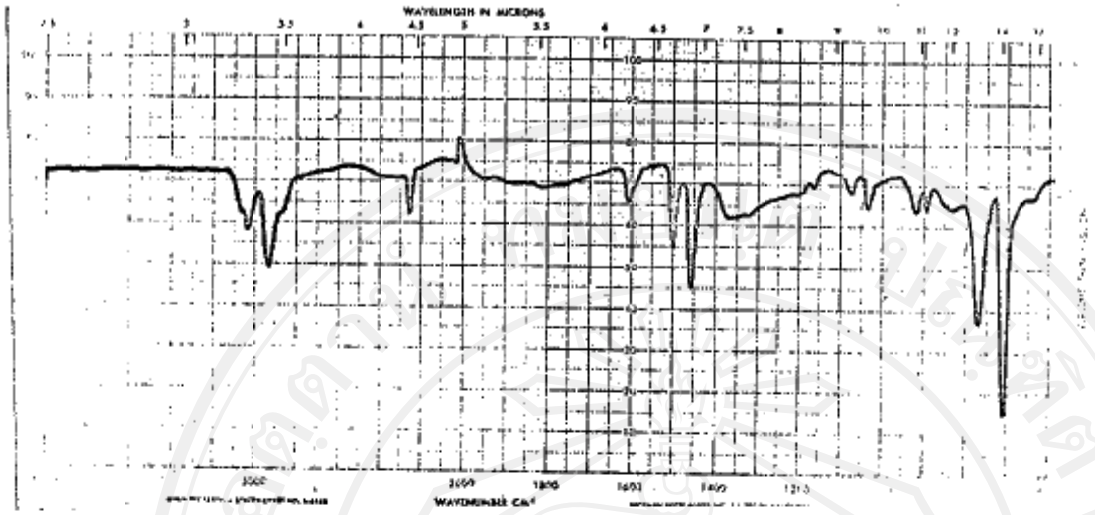

Figure 3.41 Infrared spectrum of ACN-ST copolymer(40:60)from 1,2-dichloroethane film(free radical copolymerisation).

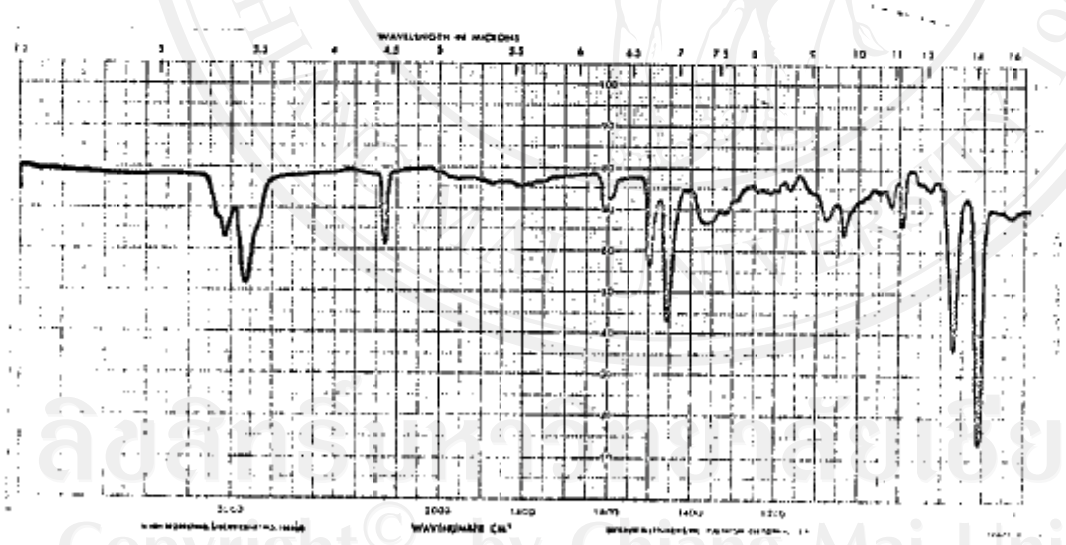

Figure 3.42 Infrared spectrum of ACN-ST copolymer(50:50)from 1,2-dichloroethane film(free radical copolymerisation).

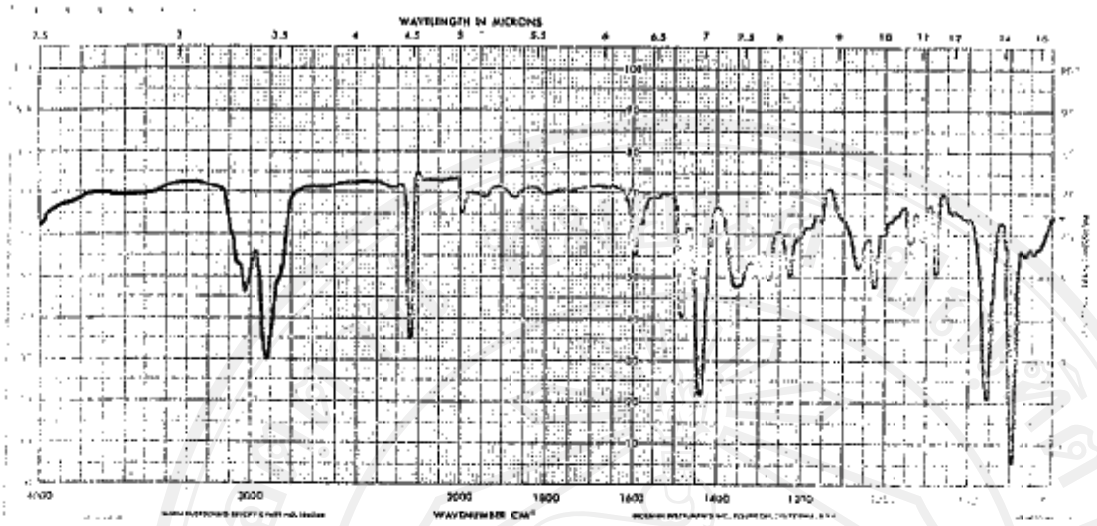

Figure 3.43 Infrared spectrum of ACN-ST copolymer(60:40)from 1,2-dichloroethane film(free radical copolymerisation).

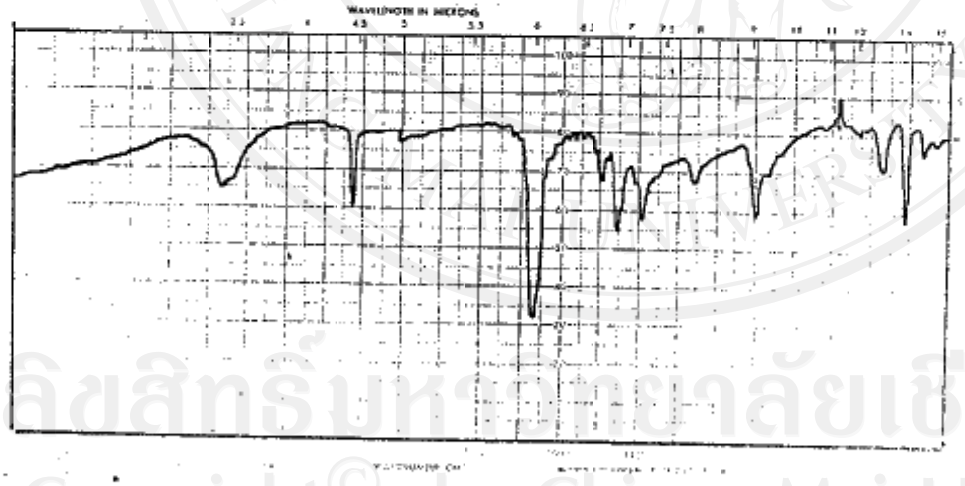

Figure 3.44 Infrared spectrum of ACN-ST copolymer(75:25)from dimethyl formamide film(free radical copolymerisation).

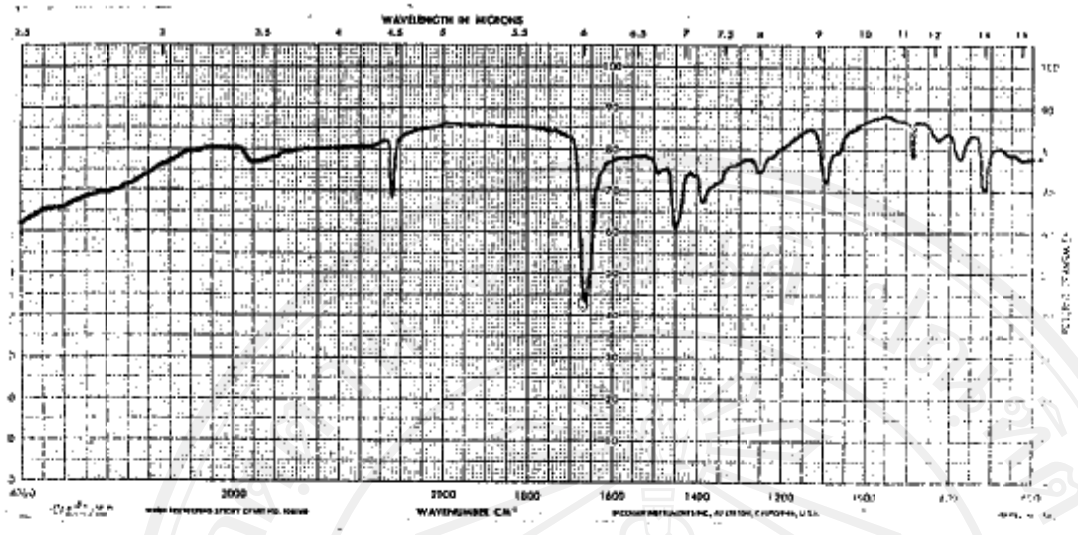

Figure 3.45 Infrared spectrum of ACN-ST copolymer(80:20)from dimethyl formamide film(free radical copolymerisation).

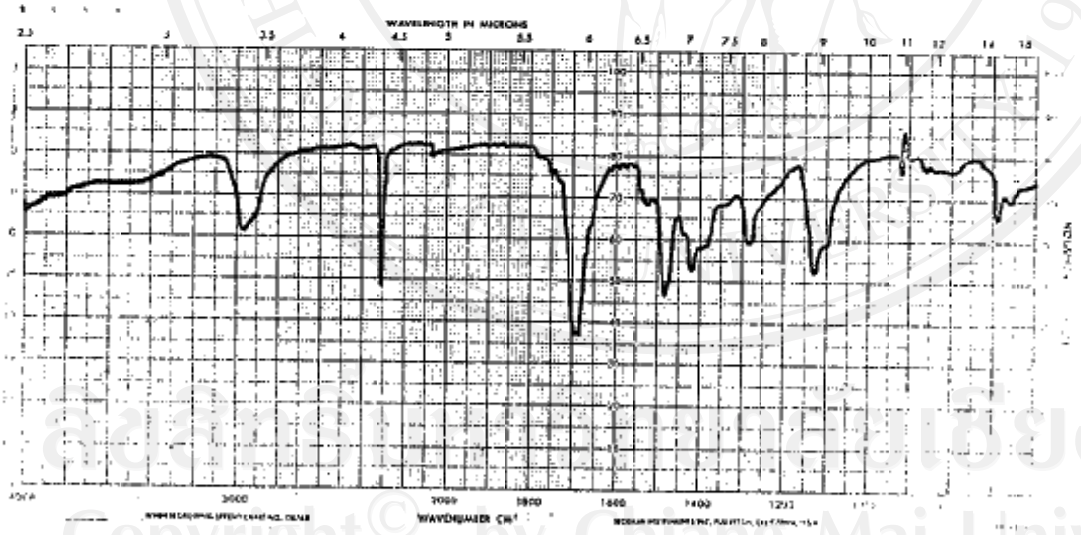

Figure 3.46 Infrared spectrum of polyacrylonitrile from dimethyl formamide film(free radical polymerisation).

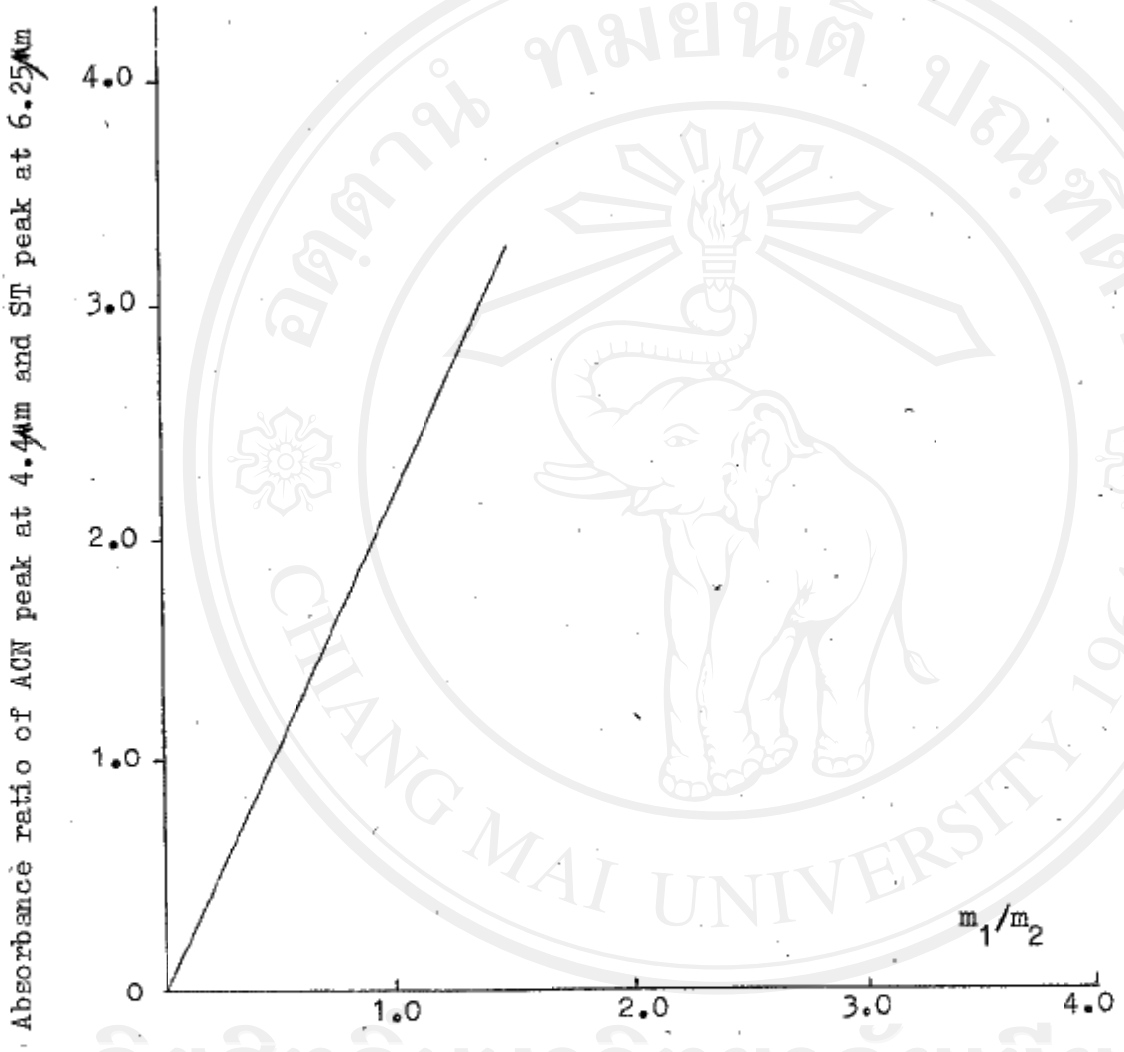

Fig. 3.47 Plot of copolymer composition ratio of ACN and ST (m_1/m_2) against absorbance ratio of ACN at 4.4μm and ST at 6.25μm.

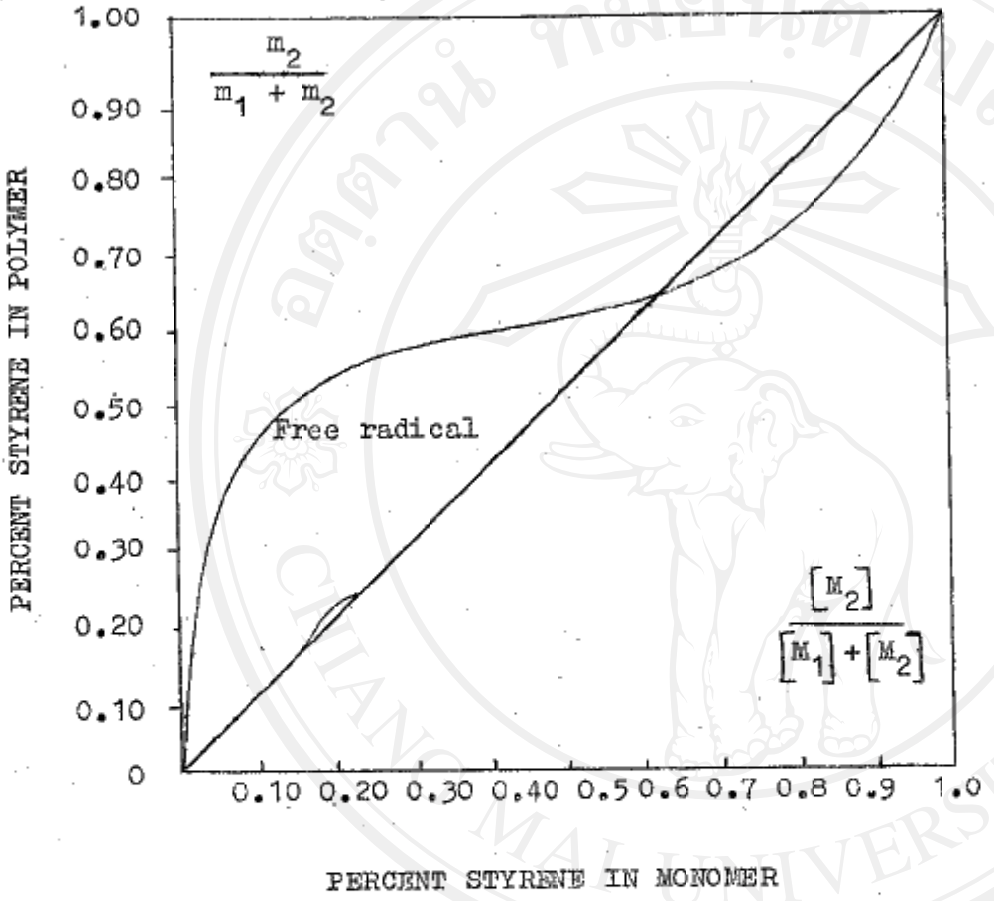

Fig. 3.48 Composition of copolymer as a function of monomer composition of acrylonitrile-styrene.

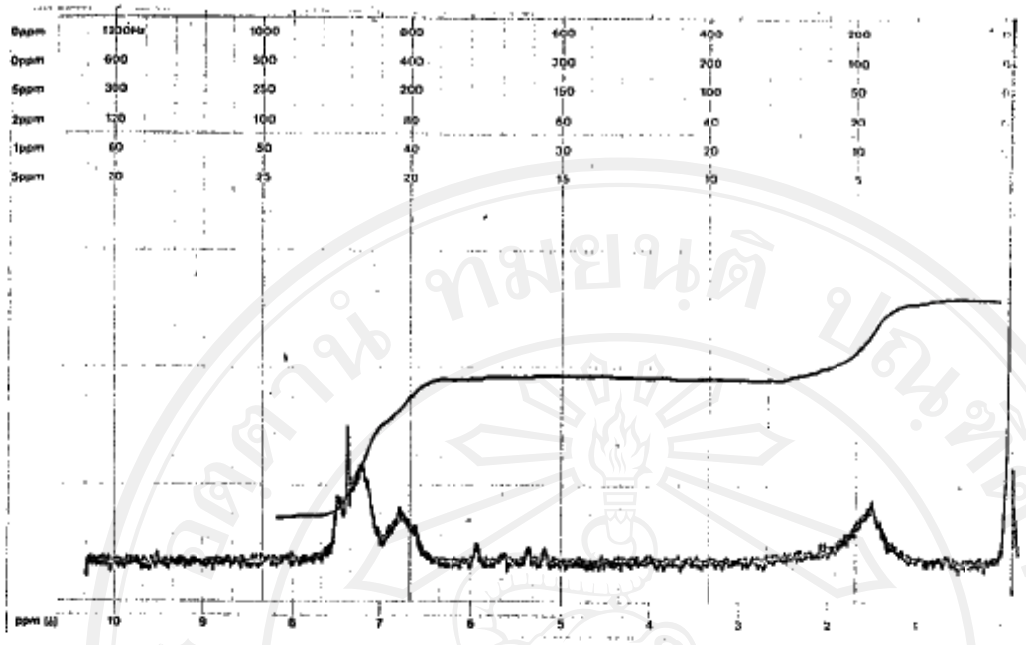

Figure 3.49 NMR spectrum of ACN-ST copolymer(20:80) (free radical copolymerisation) at 60 MHz in $CDCl_3$ at room temperature.

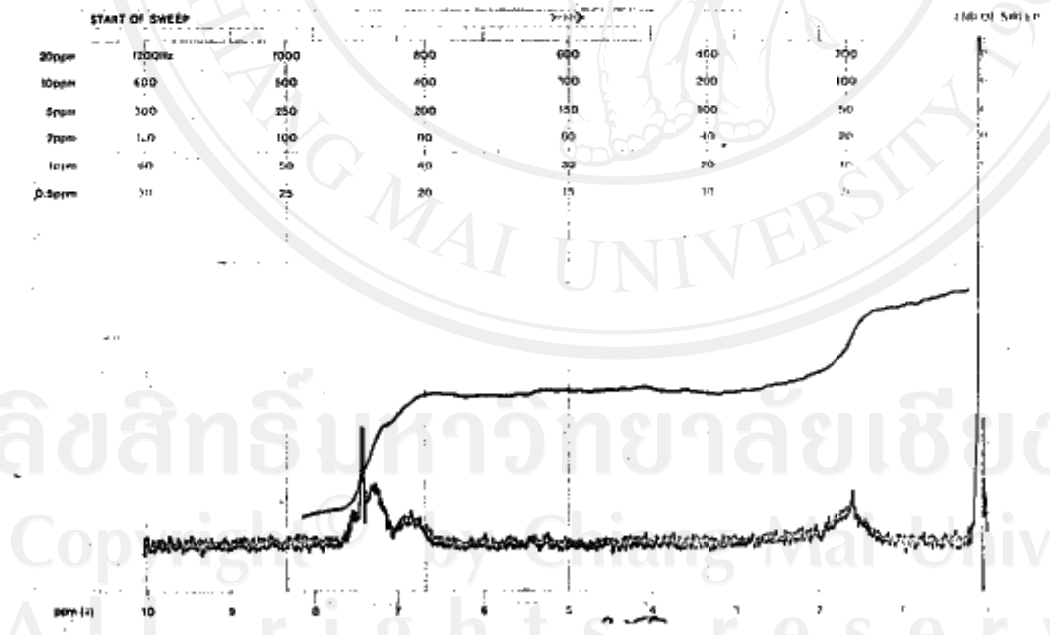

Figure 3.50 NMR spectrum of ACN-ST copolymer(25:75) (free radical copolymerisation) at 60 MHz in $CDCl_3$ at room temperature.

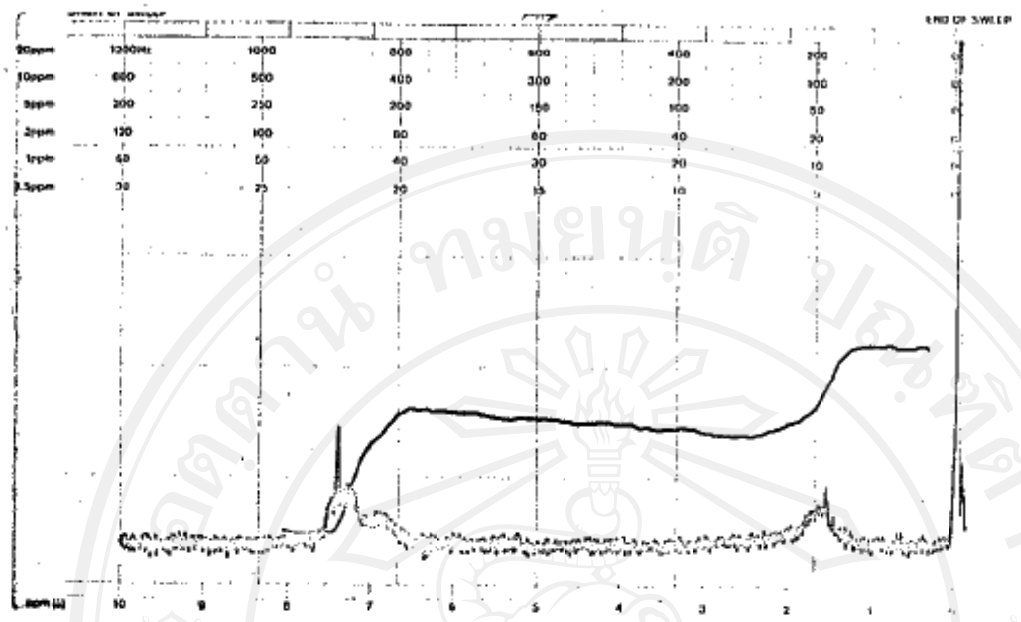

Figure 3.51 NMR spectrum of ACN-ST copolymer(40:60) (free radical copolymerisation) at 60 MHz in $CDCl_3$ at room temperature.

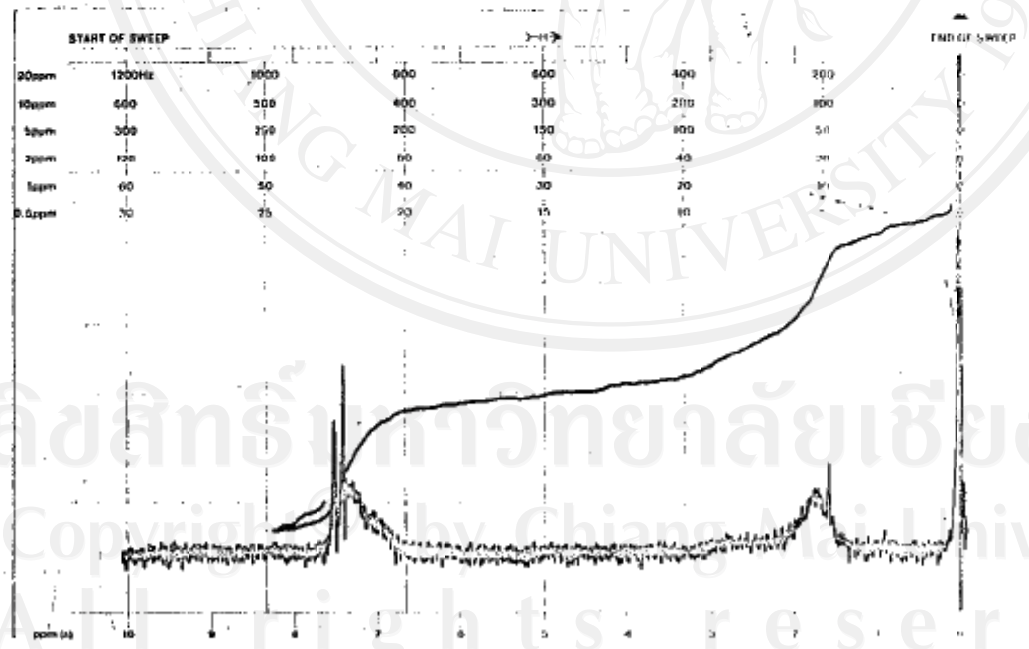

Figure 3.52 NMR spectrum of ACN-ST copolymer(50:50) (free radical copolymerisation) at 60 MHz in $CDCl_3$ at room temperature.

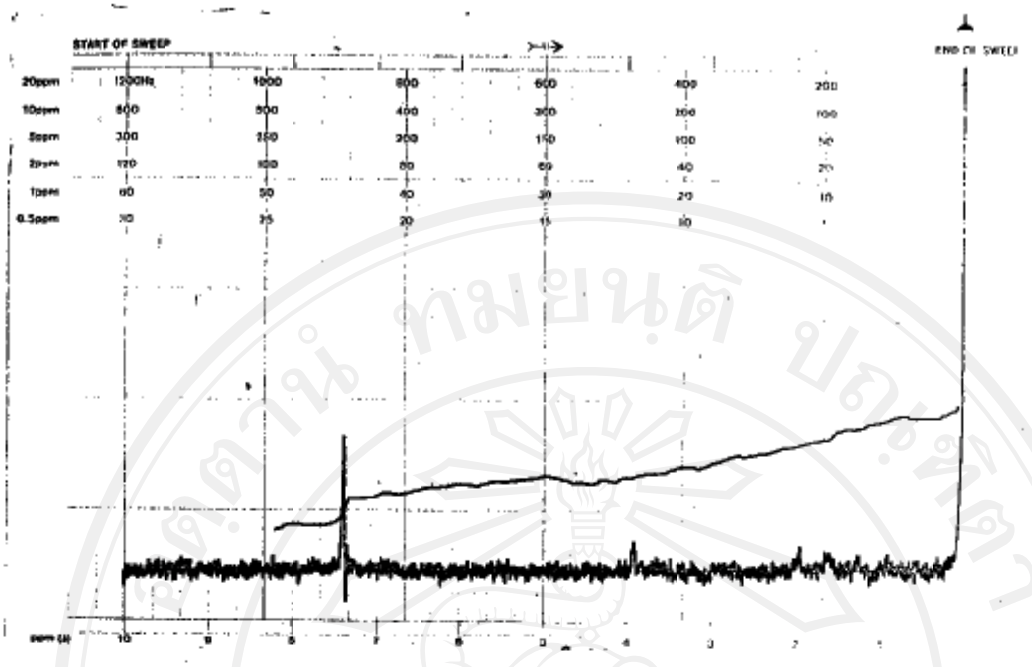

Figure 3.53 NMR spectrum of ACN-ST copolymer(60:40) (free radical copolymerisation) at 60 MHz in $CDCl_3$ at room temperature.

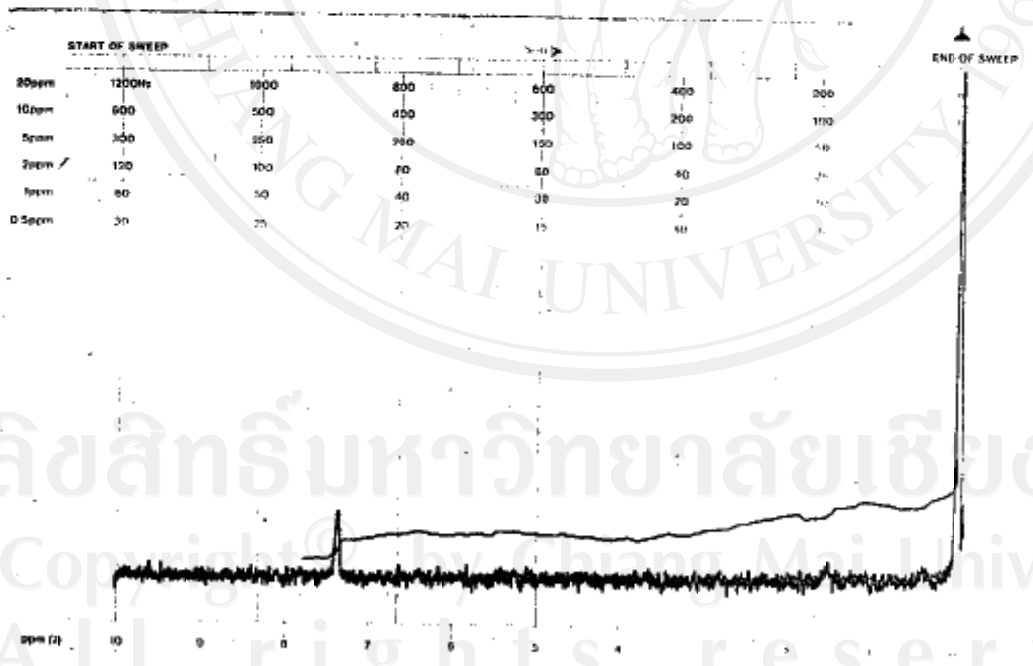

Figure 3.54 NMR spectrum of ACN-ST copolymer(75:25) (free radical copolymerisation) at 60 MHz in $CDCl_3$ at room temperature.

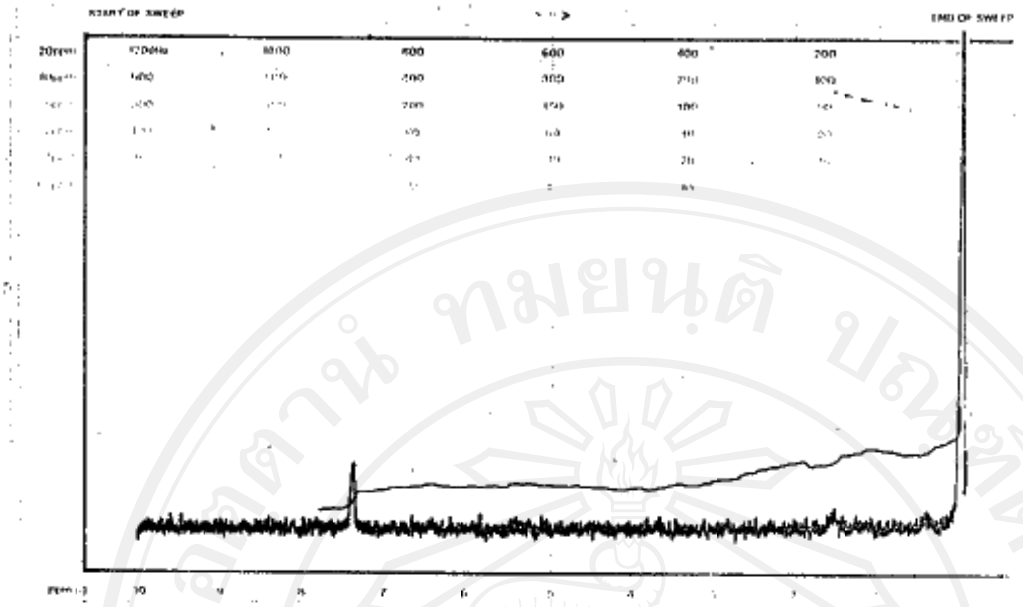

Figure 3.55 NMR spectrum of ACN-ST copolymer(80:20) (free radical copolymerisation) at 60 MHz in $CDCl_3$ at room temperature.

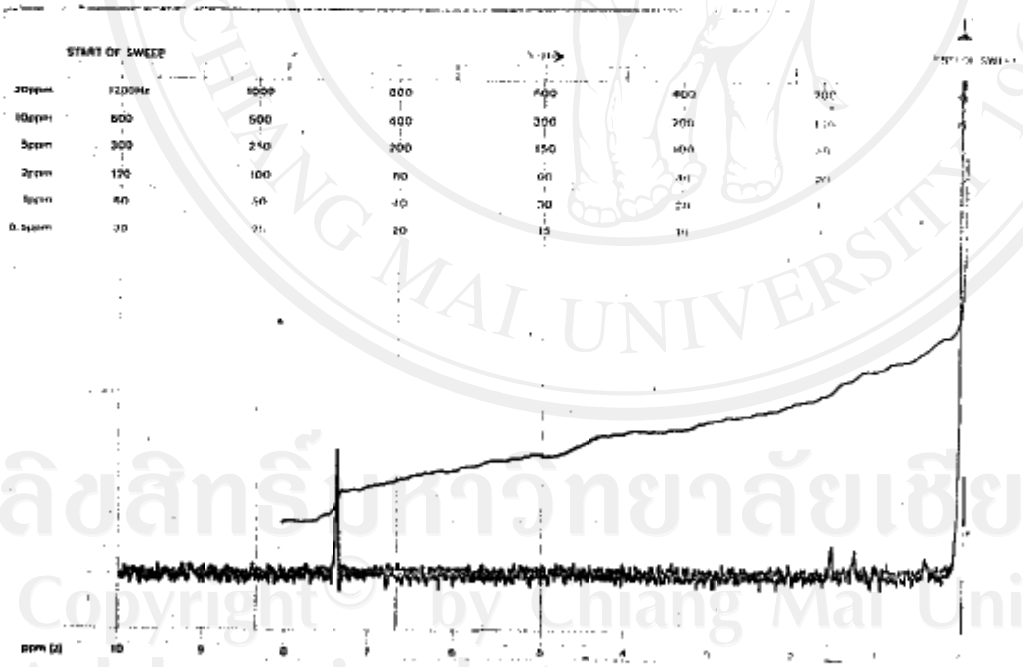

Figure 3.56 NMR spectrum of polyacrylonitrile (free radical polymerisation) at 60 MHz in $CDCl_3$ at room temperature.

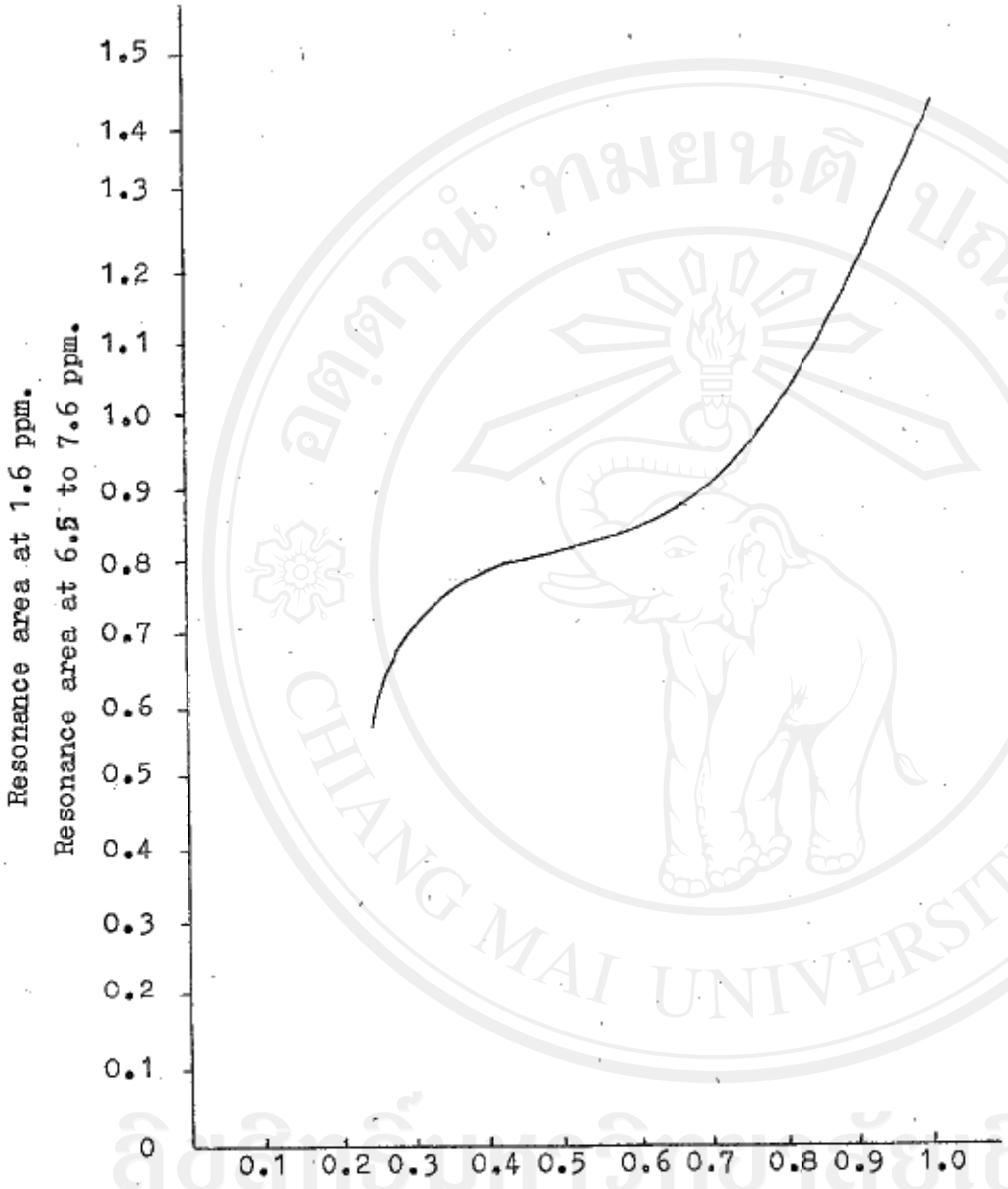

Fig. 3.57 Plot of copolymer composition of ACN-ST against the NMR resonance area ratio at 1.6 ppm. and 6.5 ppm. to 7.6 ppm.