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7. Appendix

7.1. UV measurement of the determination of the equilibrium constant of the electron donor-acceptor complexation between styrene and acceptor monomers.

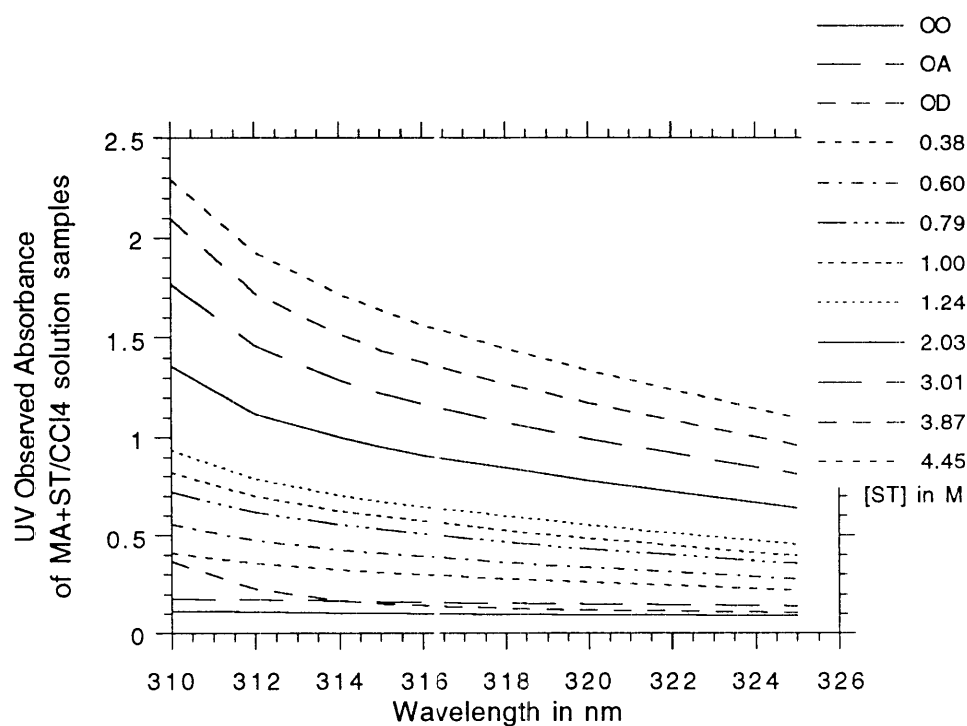


Fig.7.1.1 The overall observed UV absorbance of MA+ST in CCl₄ solution samples with various donor concentration [ST] and constant [MA]= 2.5617×10^{-3} M at room temperature.

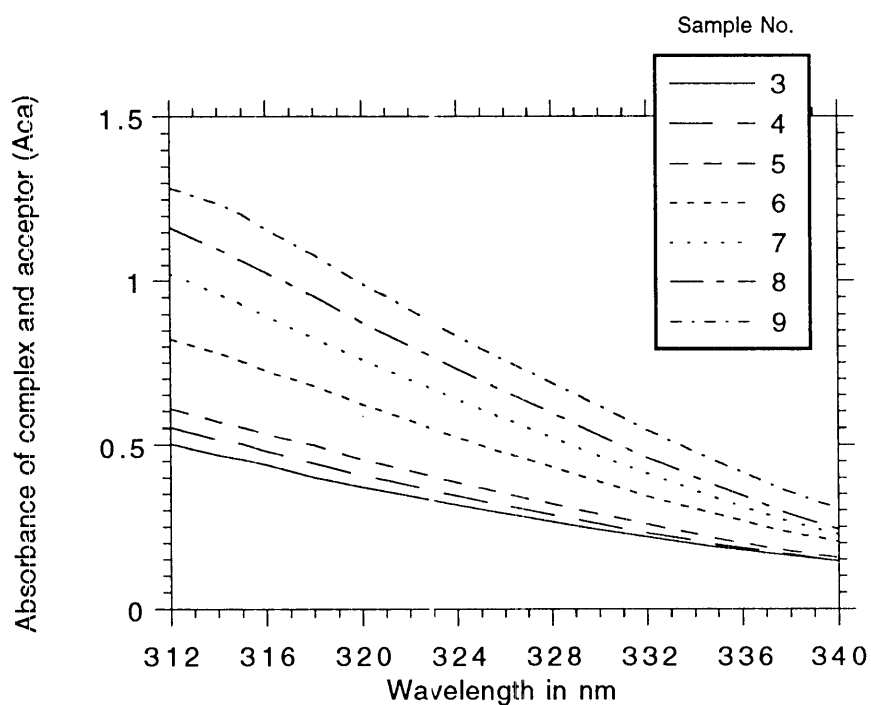


Fig.7.1.2 The UV absorbance of MA-ST complex and acceptor (MA) of MA+ST/CCl₄ solution samples with constant [MA]= 2.5617×10^{-3} M and varied [ST]=0.79-4.45 M.

Tab.7.1.1 Determination of the equilibrium constant (K) of the MA-ST complexation in CCl_4

No.	g(ST)	[D] ₀	1/[D] ₀	A^{λ}_{ca}			$[A]_0 / (A^{\lambda}_{ca} - A^{\lambda}_{OA})$		
				$\lambda = 312$	314	315nm	$\lambda = 312$	314	315nm
O	0.0			$A^{\lambda}_O =$	0.1113	0.1044	0.1031		
OA	0.0			$A^{\lambda}_{OA} =$	0.1741	0.1676	0.1627		
OD	0.8174	1.5696	0.6371	$A^{\lambda}_{OD} =$	0.2268	0.1698	0.1516		
3	0.4138	0.7946	1.2585		0.5021	0.4681	0.4541	0.0078	0.0085
4	0.523	1.0043	0.9957		0.5532	0.5142	0.5026	0.0068	0.0074
5	0.646	1.2405	0.8061		0.6078	0.5694	0.5526	0.0059	0.0064
6	1.0558	2.0274	0.4932		0.8258	0.7809	0.7549	0.0039	0.0042
7	1.5693	3.0135	0.3318		1.0226	0.9616	0.9299	0.003	0.0032
8	2.0173	8.8669	0.2586		1.1634	1.0991	1.0626	0.0026	0.0028
9	2.3188	4.4528	0.2246		1.2847	1.2369	1.2055	0.0023	0.0024

O = Solvent = CCl_4 OA= Acceptor-Solvent solution = MA- CCl_4 OD= Donor-Solvent solution = ST- CCl_4 3-9 = $[\text{MA}]_{\text{const.}} + [\text{ST}]_{\text{varied}} / \text{CCl}_4$ samples (5ml)

g(ST) = mass of styrene in 5 ml solution sample

 $[A]_0 = [\text{MA}] = 2.5617 \times 10^{-3} \text{ mol/l}$ A^{λ}_{ca} = Absorbance of complex and acceptor
= $A^{\lambda}_{\text{sample}} - \{g(\text{ST}) \cdot [A^{\lambda}_{OD} / g(\text{ST})_{OD}]\}$ $A^{\lambda}_{\text{sample}}$ = overall observed absorbance of
solution sample

Wavelength (λ) in nm	Slope (a)	Intercept (b)	Regression (R)	$K = b/a$
312	0.005 4437	0.001 22	0.996 68	0.224
314	0.006 0485	0.001 2024	0.996 79	0.199
315	0.006 201	0.001 2539	0.997 06	0.202

The equilibrium constant of MA-ST complexation in CCl_4 at room temperature :(determined by UV spectroscopy using Ketchik equation) $K = 0.208 \pm 0.015 \text{ l/mol}$

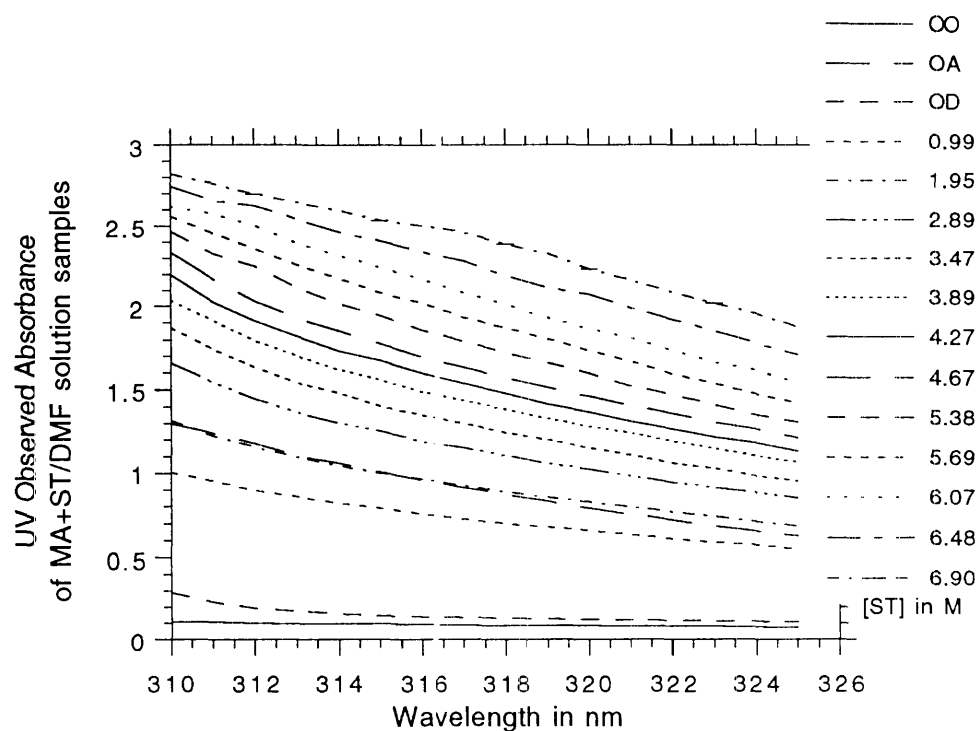


Fig.7.1.3 The overall observed UV absorbance of MA+ST in DMF solution samples with various donor concentration $[ST]=0.99\text{--}6.90\text{M}$ and $[MA]=4.8869\times 10^{-3}\text{M}$ at room temperature.

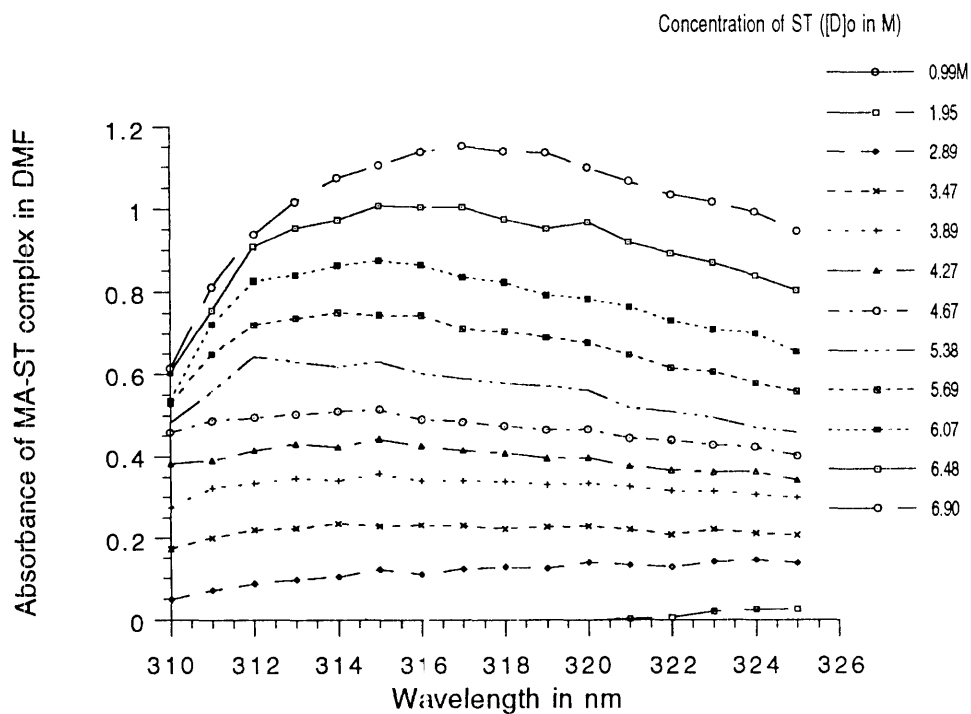


Fig.7.1.4 The UV absorbance of MA-ST complex in MA+ST/DMF solution samples with constant $[MA]=4.8869\times 10^{-3}\text{M}$ and varied $[ST]=1.95\text{--}6.90\text{M}$.

Tab.7.1.2 UV absorbance of MA(A or 0)-ST(D or 1) complex in DMF by varied MA mole fraction of $f_0 = 0.0 - 1.0$ in MA+ST/ DMF. $[MA+ST] = 2.000 \pm 0.001$ M. (Data of continuous variation plot in Fig.4.1.2)

No.	f ₀	[MA] in M	g(MA)	g(ST)	Absorbance of MA-ST complex = A^{λ_c} $\lambda = 370 \quad 371 \quad 372 \quad 373 \quad 374 \quad 375 \quad 376 \quad 377 \quad 378 \quad 379 \quad 380\text{nm}$										
OO					$A^{\lambda_{OO}} = 0.0495$	0.0489	0.0485	0.0492	0.047	0.0469	0.0466	0.0476	0.0471	0.0457	0.0458
					$a^{\lambda_{OA}} = 0.043$	0.0425	0.0414	0.0416	0.041	0.0401	0.0394	0.0396	0.0389	0.0382	0.0382
					$b^{\lambda_{OA}} = 0.1345$	0.1204	0.1084	0.0972	0.0869	0.0785	0.0706	0.0623	0.0569	0.0522	0.0472
0=OD	0.0	0.0	0.0	1.0415	0.0030	0.0025	0.0025	0.0034	0.0020	0.0045	0.0043	0.0031	0.0039	0.0047	0.0032
2	0.2	0.4	0.1961	0.8332	0.6337	0.5747	0.5246	0.4771	0.4330	0.3929	0.3552	0.3207	0.2887	0.2615	0.2346
4	0.4	0.8	0.3922	0.6249	0.9421	0.8621	0.7829	0.7131	0.6494	0.5872	0.5327	0.4813	0.434	0.3909	0.3537
5	0.5	1.0	0.4903	0.5208	0.9771	0.8910	0.8112	0.7359	0.6675	0.6068	0.5458	0.4951	0.4460	0.4008	0.3614
6	0.6	1.2	0.5883	0.4166	0.9420	0.8583	0.7802	0.7099	0.6447	0.5841	0.5281	0.4769	0.4267	0.3859	0.3456
8	0.8	1.6	0.7845	0.2083	0.6327	0.5768	0.5261	0.4736	0.4329	0.3909	0.3528	0.3200	0.2856	0.2555	0.2308
10=OA	1.0	2.0	0.9806	0.0	0.0163	0.0170	0.0197	0.0206	0.0216	0.0227	0.0241	0.0256	0.0246	0.0242	0.0252

$$A^{\lambda_c} = A^{\lambda_{\text{sample}}} - A^{\lambda_{\text{oa}}} - A^{\lambda_{\text{od}}} + A^{\lambda_{\text{OO}}}$$

$$= A^{\lambda_{\text{sample}}} - A^{\lambda_{\text{oa}}}$$

$$A^{\lambda_{\text{OO}}} \approx A^{\lambda_{\text{od}}} \approx A^{\lambda_{\text{OD}}} \text{ for } \lambda = 370 - 380 \text{ nm}$$

$$A^{\lambda_{\text{oa}}} = A^{\lambda_{\text{OA}}} = a^{\lambda_{\text{OA}}} + b^{\lambda_{\text{OA}}} \cdot [\text{MA}] \quad (A^{\lambda_{\text{OA}}} \text{ was calibrated vs. } [\text{MA}])$$

$A^{\lambda_{\text{sample}}}$ = overall observed absorbance of solution sample

$A^{\lambda_{\text{OO}}}$ = Absorbance of DMF

$A^{\lambda_{\text{oa}}}$ = Absorbance of MA in MA+ST/ DMF solution sample

$A^{\lambda_{\text{OA}}}$ = Absorbance of MA in DMF

$A^{\lambda_{\text{od}}}$ = Absorbance of ST in MA+ST/ DMF solution sample

$A^{\lambda_{\text{OD}}}$ = Absorbance of ST in DMF

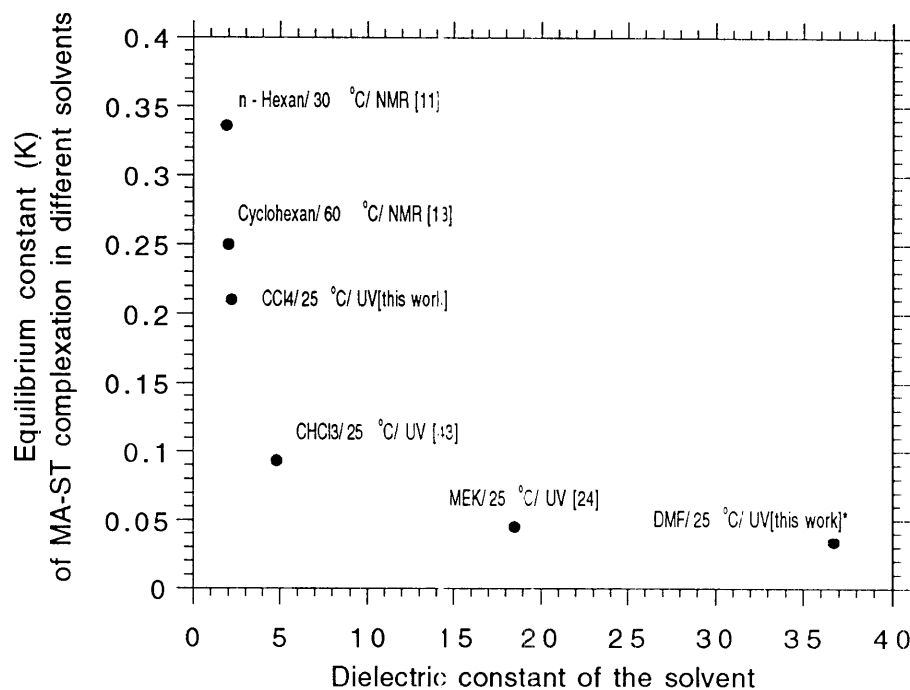


Fig.7.1.5 The equilibrium constant (K) of MA-ST complexation in different solvents vs. the dielectric constant (ϵ) of the corresponding solvent. (* estimated value).

Tab.7.1.3. Empirical correlation between the MA-ST complexation equilibrium constant (K) and the dielectric constant (ϵ) of the solvent for the estimation of K in DMF.

Solvent	Dielectric constant (ϵ) ⁸³	K [l/mol]	(T / method)	$K^{-2.5}$
<i>n</i> -Hexan	1.9	0.336	30°C / NMR ¹¹	15.281
Cyclohexan	2.0	0.25	60°C / NMR ¹³	32.000
Carbon tetrachloride	2.2	0.21	23°C / UV [this work]	49.483
Chloroform	4.8	0.093	23°C / UV ⁴³	379.13
Methyl Ethyl Ketone	18.5	0.045	23°C / UV ²⁴	2327.9
DMF	36.7	0.035	23°C / estimated	4363.4
$K^{-2.5} = -239.95 + 135.17 \times \epsilon$ (Regression =0.999 83)				

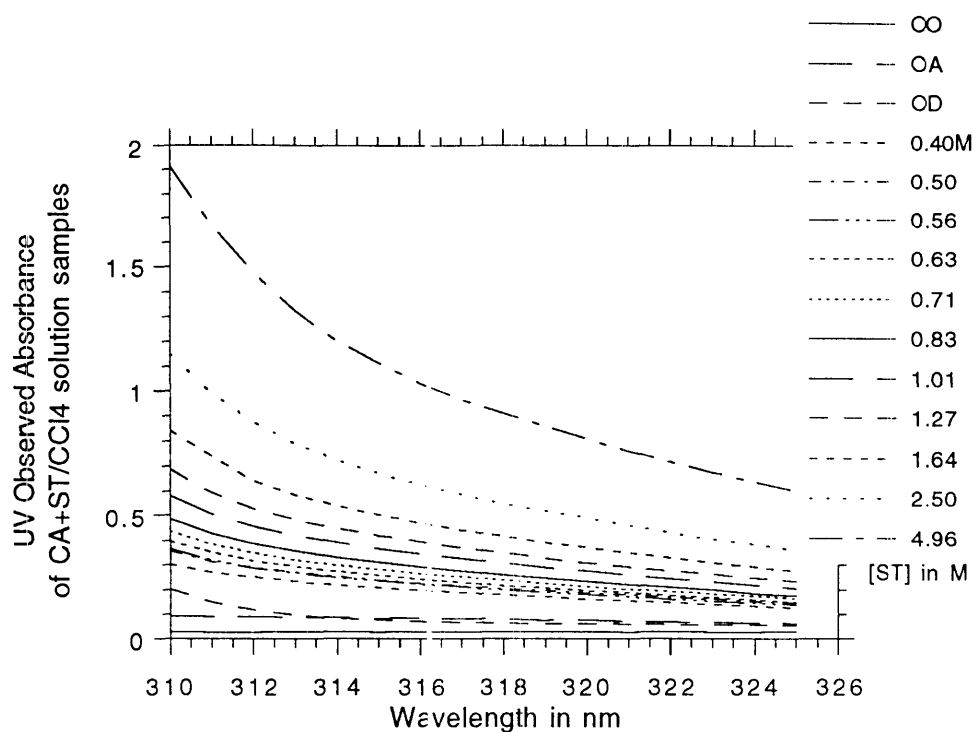


Fig.7.1.6 The overall observed UV absorbance of CA+ST in CCl_4 solution samples with various donor concentration $[\text{ST}]=0.40\text{-}4.96\text{M}$ and constant $[\text{CA}]=2.7834\times 10^{-3}\text{M}$ at room temperature.

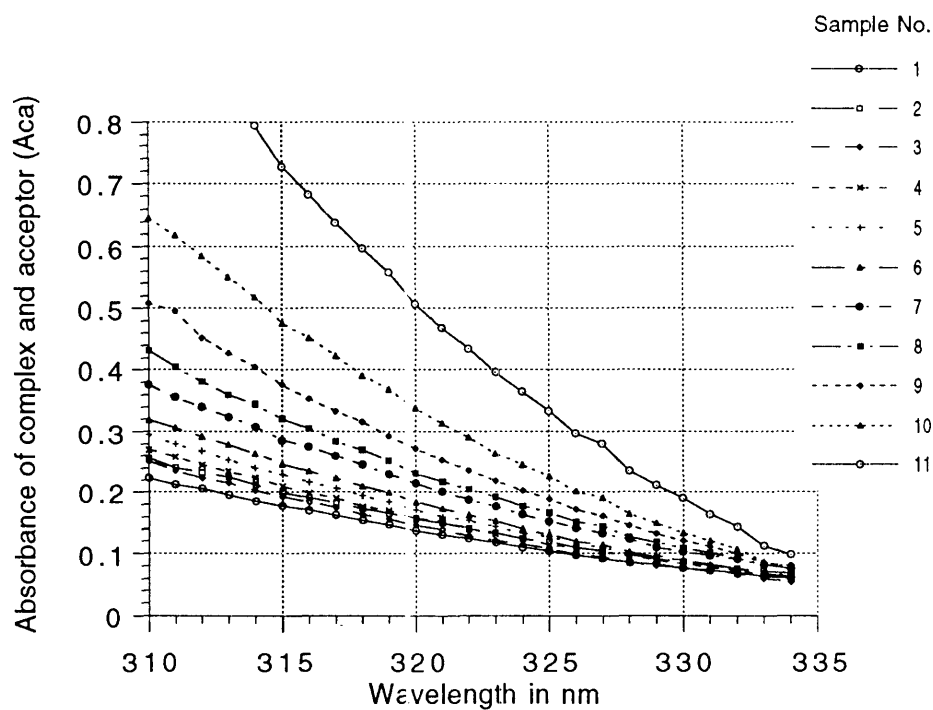


Fig.7.1.7 The UV absorbance of CA-ST complex and acceptor (CA) of CA+ST/ CCl_4 solution samples with constant $[\text{CA}]=2.7834\times 10^{-3}\text{M}$ and varied $[\text{ST}]=0.40\text{-}4.96\text{M}$.

Tab.7.1.4 Determination of the equilibrium constant of the CA-ST complexation in CCl₄

No.	g(ST)	[D] ₀	1/[D] ₀	A ^λ _{ca} λ =311	312	313	314	315	316	317 nm	
O	0.0			A ^λ _O =	0.0267	0.0262	0.0277	0.0284	0.0262	0.0288	0.0278
OA	0.0			A ^λ _{OA} =	0.0911	0.0899	0.0877	0.0886	0.082	0.0835	0.0822
OD	0.5193	0.9972	1.0028	A ^λ _{OD} =	0.149	0.1156	0.0954	0.0819	0.0776	0.0699	0.0656
4	0.3262	0.6264	1.5964		0.2584	0.2446	0.2343	0.2238	0.2103	0.1984	0.1901
5	0.3683	0.7072	1.4139		0.2793	0.2675	0.2532	0.2404	0.2292	0.2165	0.2073
6	0.4305	0.8267	1.2097		0.306	0.2913	0.2782	0.2633	0.2469	0.2344	0.2231
7	0.5266	1.0112	0.9889		0.3555	0.3397	0.3242	0.3078	0.2858	0.2748	0.2604
8	0.6627	1.2726	0.7858		0.4041	0.3813	0.3603	0.3442	0.3211	0.3055	0.2842
9	0.8535	1.6390	0.6101		0.4951	0.452	0.4268	0.4046	0.3753	0.3538	0.3336
10	1.302	2.5002	0.4000		0.6178	0.584	0.5499	0.5179	0.4764	0.4517	0.4229
11	2.5807	4.9557	0.2018		0.9293	0.9017	0.8506	0.7945	0.727	0.6833	0.6382

No.	[A] ₀ ' (A ^λ _{ca} - A ^λ _{OA}) λ =311 312 313 314 315 316 317nm						
4	0.0166	0.0180	0.0190	0.0206	0.0217	0.0242	0.0258
5	0.0148	0.0157	0.0168	0.0183	0.0189	0.0209	0.0223
6	0.0130	0.0138	0.0146	0.0159	0.0169	0.0185	0.0198
7	0.0105	0.0111	0.0118	0.0127	0.0137	0.0145	0.0156
8	0.0089	0.0096	0.0201	0.0109	0.0116	0.0125	0.0138
9	0.0069	0.0077	0.0082	0.0088	0.0095	0.0103	0.0111
10	0.0053	0.0056	0.0060	0.0065	0.0071	0.0075	0.0082
11	0.0033	0.0034	0.0036	0.0039	0.0043	0.0046	0.0050

O = Solvent = CCl₄OA= Acceptor-Solvent solution = CA-CCl₄OD= Donor-Solvent solution = ST-CCl₄4-11= [CA]_{const.} + [ST]_{varied} / CCl₄ samples (5ml)

g(ST)= mass of styrene in 5 ml solution sample

[A]₀ = [CA] = 2.7834x10⁻³ mol/lA^λ_{ca} = Absorbance of complex and acceptor
= A^λ_{sample} - {g(ST) · [A^λ_{OD} / g(ST)_{OD}]}A^λ_{sample} = overall observed absorbance of
solution sample

Wavelength (λ) in nm	Intercept (b)	Slope (a)	Regression (R)	K= b/ a
311	0.001 3203	0.009 5372	0.999 46	0.138
312	0.001 4049	0.010 226	0.999 2	0.137
313	0.001 5378	0.010 82	0.999 21	0.142
314	0.001 5584	0.011 825	0.999 19	0.132
315	0.001 978	0.012 188	0.999 21	0.162
316	0.001 8153	0.013 69	0.998 24	0.133
317	0.002 1325	0.014 486	0.998 21	0.147

The equilibrium constant of CA-ST complexation in CCl₄ at room temperature :

(determined by UV spectroscopy using Ketelaar equation)

$$K = 0.142 \pm 0.015 \text{ l/mol}$$

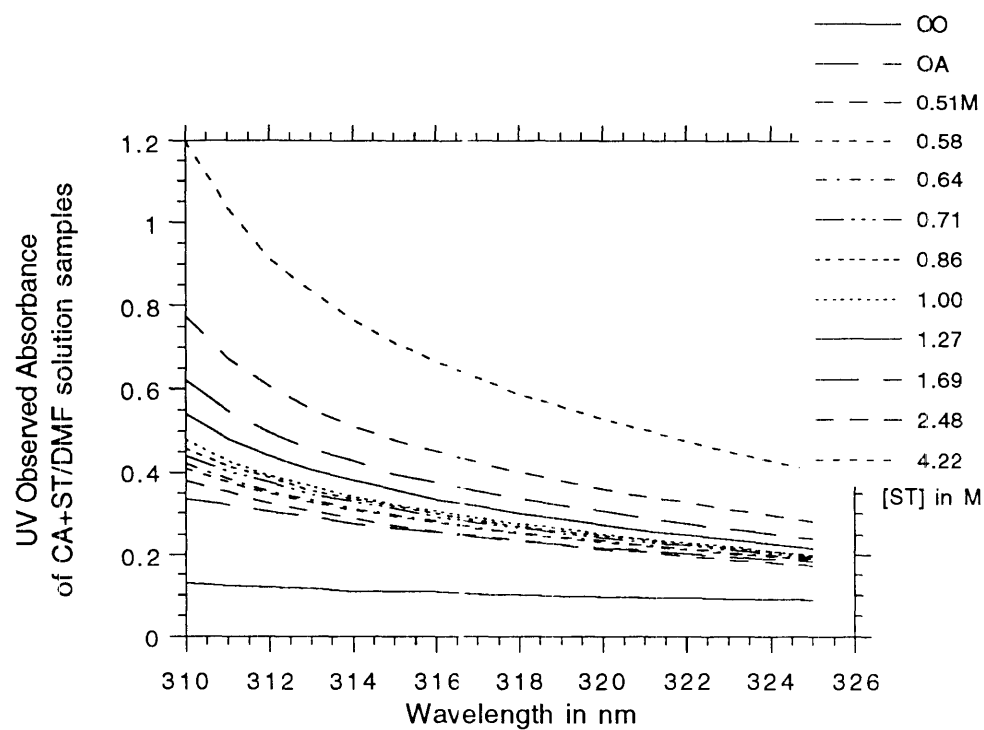


Fig.7.1.8 The overall observed UV absorbance of CA+ST in DMF solution samples with various donor concentration $[ST]=0.51-4.22M$ and $[CA]=2.6800 \times 10^{-3}M$ at room temperature.

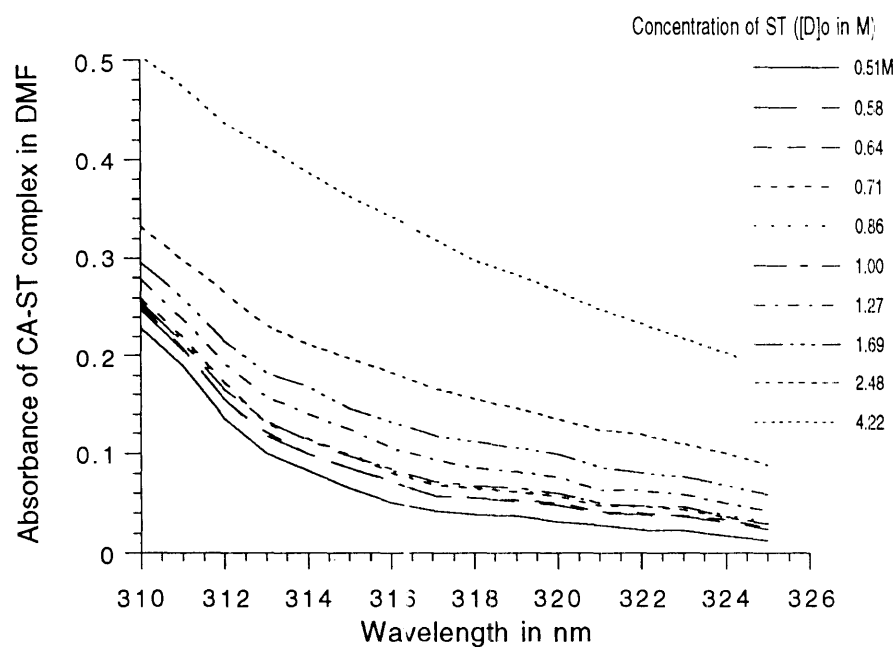


Fig.7.1.9 The UV absorbance of CA-ST complex in MA+ST/DMF solution samples with constant $[CA]=2.6800 \times 10^{-3}M$ and varied $[ST]=0.51-4.22M$.

Tab.7.1.5 Determination of the equilibrium constant of the CA-ST complexation in DMF

No.	g(ST)	[D] ₀	1/[D] ₀	A ^{λ_c}				[A] ₀ /(A ^{λ_c})			
				λ =317	318	319	320nm	λ =317	318	319	320nm
O	0.0		A ^{λ_O} =	0.1029	0.1012	0.0972	0.0963				
OA	0.0		A ^{λ_{OA}} =0.2421	0.232	0.2232	0.2148					
OD			a ^{λ_{OD}} =0.0498	0.0508	0.0473	0.0492					
			b ^{λ_{OD}} =0.0537	0.0491	0.0469	0.0428					
6	0.5183	0.9953	1.0047	0.0725	0.0679	0.0662	0.0602	0.0370	0.0395	0.0405	0.0445
7	0.6593	1.2660	0.7899	0.0945	0.0855	0.0822	0.0767	0.0284	0.0314	0.0326	0.0350
8	0.8812	1.6922	0.5910	0.1187	0.1123	0.1058	0.0998	0.0226	0.0239	0.0253	0.0269
9	1.2926	2.4822	0.4029	0.1668	0.1559	0.1462	0.1353	0.0161	0.0172	0.0183	0.0198
10	2.1953	4.2156	0.2372	0.3206	0.2981	0.2836	0.2668	0.0084	0.0090	0.0095	0.0100

O = Solvent = DMF

OA= Acceptor-Solvent solution = CA-DMF

OD= Donor-Solvent solution = ST-DMF

6-10 = [CA]_{const.} + [ST]_{varied} / DMF samples (5ml)

g(ST) = mass of styrene in 5 ml solution sample

[A]₀ = [CA]= 2.6800x10⁻³ mol/lA^{λ_c}= Absorbance of complex= A^{λ_{sample}} - A^{λ_D} - A^{λ_{OA}} + A^{λ_O}A^{λ_{sample}} = overall observed absorbance of solution sampleA^{λ_{OD}} vs g(ST)_{OD} was calibrated, so A^{λ_D}= a^{λ_{OD}} + b^{λ_{OD}}. g(ST)

Wavelength (λ) in nm	Slope (a)	Intercept (b)	Regression (R)	K= b/ a
317	0.036 088	0.000 6257	0.997 42	0.017
318	0.039 013	0.000 570 26	0.998 53	0.015
319	0.039 601	0.001 282 7	0.997 03	0.032
320	0.043 638	0.000 825	0.997 58	0.019

The equilibrium constant of CA-ST complexation in DMF at room temperature :

(determined by UV spectroscopy using Ketelaar equation) $K = 0.021 \pm 0.015$ l/ mol

7.2. Copolymer preparation.

Tab.7.2.1. Copolymerisation of ST with MA in CCl₄ and in DMF at 50° C.

No.	f_0				MA+ST / CCl ₄			MA+ST / DMF		
		g (MA)	g (ST)	ml (Solvent)	t_{reaction} (minute)	g (copolymer)	conv. (%)	t_{reaction} (minute)	g (copolymer)	conv. (%)
1	0.00	0.0000	4.1660	5.37				423	0.4006	9.5
2	0.01	0.0392	4.1244	5.42	20.5	0.0467	1.11	106	0.1690	4.01
3	0.02	0.0784	4.0827	5.44	16.2	0.0771	1.83	47	0.0981	2.33
4	0.05	0.1961	3.9577	5.49	9.1	0.0726	1.75	45	0.2165	5.15
5	0.10	0.3922	0.3749	5.56	15.1	0.4303	5.19	38	0.2298	5.48
6	0.15	0.5884	3.5411	5.64	8.7	0.0986	2.39	33	0.1263	3.02
7	0.20	0.7845	3.3328	5.71	8.4	0.0873	2.12	41	0.2583	6.2
8	0.25	0.9806	3.1245	5.79	9.2	0.3115	7.5	42	0.2848	6.85
9	0.30	1.1767	2.9162	5.87	8.0	0.1652	4.04	36	0.161	3.88
10	0.35	1.3728	2.7079	5.94				30	0.1243	3.01
11	0.40	1.5689	2.4996	6.02	11.2	0.2352	5.78	37	0.1079	2.62
12	0.50	1.9612	2.0830	6.17	7.7	0.1034	2.56	35	0.1035	2.35
13	0.60	2.3534	1.6664	6.33	7.2	0.1204	3.00	38	0.1195	2.94
14	0.70	2.7456	1.2498	6.48	7.4	0.1237	3.1	36	0.0618	1.53
15	0.80	3.1379	0.8332	6.63	8.2	0.1919	4.83	40	0.0845	2.10
16	0.90	3.5301	0.4166	6.79	9.1	0.1084	2.75	41	0.0271	0.68
Precipitation solvent (~ 100 ml)					Petroleum spirit (bp.60-80°C)			Diethyl ether (DEE)		
Resolved in Acetone (~ 7 ml)										
Reprecipitation solvent (~ 100 ml)					boiling Petroleum spirit (bp.80-110°C)			Diethyl ether (DEE)		

[MA+ST]=4.000±0.001 M

[AIBN]= 0.0305±0.0001 M =0.0500g±0.0005 g/ 10 ml

Total copolymerisation mixture volume = 10.0±0.1 ml

f_0 = MA mole fraction in feed

conv. = conversion of copolymerisation

t_{reaction} = time of reaction, controlled by a stop clock.

Tab.7.2.2. Copolymerisation of ST with CA in CCl₄ and in DMF at 50° C.

No.	f_0	CA+ST / CCl ₄						CA+ST / DMF		
		g (CA)	g (ST)	ml (Solvent)	t_{reaction} (minute)	g (copolymer)	conv. (%)	t_{reaction} (minute)	g (copolymer)	conv. (%)
1	0.00	0.0000	4.1660	5.37				423	0.4006	9.5
2	0.01	0.0448	4.1244	5.38	176	0.2106	4.99	239	0.1797	4.26
3	0.02	0.0897	4.0827	5.39	94	0.0885	2.1	542	0.2689	6.36
4	0.05	0.2242	3.9577	5.42	101	0.1211	2.86	538	0.2594	6.13
5	0.10	0.4484	0.3749	5.47	160	0.1757	4.14	411	0.0937	2.2
6	0.15	0.6725	3.5411	5.53	110	0.1381	3.24	408	0.1495	3.5
7	0.20	0.8967	3.3328	5.58	85	0.1055	2.46	603	0.124	2.9
8	0.25	1.1209	3.1245	5.63	106	0.1102	2.56	410	0.148	3.44
9	0.30	1.3451	2.9162	5.68	125	0.1619	3.75	372	0.0475	1.1
10	0.35	1.5692	2.7079	5.73	103	0.1362	3.15	407	0.1675	3.87
11	0.40	1.7934	2.4996	5.78	93	0.1394	3.21	364	0.0622	1.43
12	0.50	2.2418	2.0830	5.88	120	0.1532	3.5	401	0.113	2.58
13	0.60	2.6902	1.6664	5.99	96	0.1642	3.73	558	0.0464	1.05
14	0.70	3.1385	1.2498	6.09	88	0.2207	4.97	584	0.045	1.0
15	0.80	3.5867	0.8332	6.19	92	0.1686	3.77	2 413	0.0624	1.4
16	0.90	4.0352	0.4166	6.30	96	0.1557	3.46			
17	0.95	4.2594	0.2083	6.35	354	0.2718	6.02			
Precipitation solvent (~ 100 ml)				Petroleum spirit (bp.60-80°C)				Diethyl ether (DEE)		
Washing solvent (~ 100 ml)				boiling Petroleum spirit (bp.80-110°C)				Diethyl ether (DEE)		

[CA+ST]=4.000±0.001 M

[AIBN]= 0.0305±0.0001 M =0.0500g±0.0005 g/ 10 ml

Total copolymerisation mixture volume = 10.0±0.1 ml

f_0 = CA mole fraction in feed

conv. = conversion of copolymerisation

t_{reaction} = time of reaction, controlled by a stop clock.

Tab.7.2.3 Copolymerisation of ST with MA in ten different solvents at 50°C.

[MA]=[ST]=1.000±0.001M, [AIBN]=0.0153±0.0001M, V_{total}=20.0±0.1ml

g(AIBN) = 0.0500g

g(MA) = 1.1912

g(Hydro quinone) < 0.0033g

g(ST) = 2.0380

Solvent =16.17ml

No.	Solvent	Dielectric constant (ϵ) ⁸³	t _{reaction} (minute)	g (copolymer)	conv. (%)
1	Carbon tetrachloride (CCl ₄)	2.24	5.7	0.1644	4.01
2	Di-n-butyl ether (C ₄ H ₉ -O-C ₄ H ₉)	3.06	8.0	0.2731	6.69
3	Chloroform (CHCl ₃)	4.8	5.9	0.304	7.42
4	1,1,1-Trichloroethane (CCl ₃ -CH ₃)	7.52	6.9	0.1588	4.53
5	1,1,2,2-Tetrachloroethane (CHCl ₂ -CHCl ₂)	8.2	5.9	0.2805	6.83
6	Methylenechloride (CH ₂ Cl ₂)	8.9	6.5	0.099	2.42
7	1,2-Dichloroethane (CH ₂ Cl-CH ₂ Cl)	10.36	8.5	0.1748	4.27
8	Methyl ethyl ketone (MEK)	18.51	12.1	0.1675	4.09
9	Acetone (CH ₃ -O-CH ₃)	20.7	16.3	0.2673	6.53
10	N,N-Dimethylformamide (DMF)	36.7	95.9	0.105	2.56

Precipitation solvent (~ 100 ml)

Petroleum spirit (bp.60-80°C)

Re-dissolved in Acetone (~ 7 ml)

Reprecipitation solvent (~ 100 ml)

boiling Petroleum spirit (bp.80-110°C)

For the copolymerisation in DMF solution diethyl ether (DEE) was used for precipitating the copolymer

Tab.7.2.4. Copolymerisation of ST with BMA, with DCMA and with MI at 50°C.

	t _{reaction} (min)	g (copolymer)	conv. (%)
[BMA]=[ST]=0.5M, [AIBN]=0.0100M=0.0492g g(BMA)=2.6504 V _{CCl4} = 26.88ml g(ST) = 1.5677 V _{Total} = 30 ml Precipitation solvent = Petroleum spirit (bp.60-80°C) and boiling Petroleum spirit (bp.80-110°C)	237	0.1666	3.9
[DCMA]=[ST]=1M, [AIBN]=0.0200M=0.0657g g(DCMA)=3.339 V _{CHCl3} = 15ml g(ST) = 2.083 V _{Total} = 20 ml Precipitation solvent = Petroleum spirit (bp.60-80°C) and boiling Petroleum spirit (bp.80-110°C)	1 450	0.1735	3.15
[MI]=[ST]=1M, [AIBN]=0.0200M=0.0657g g(MI) = 1.9416 V _{CCl4} = 16.14ml g(ST) = 2.083 V _{Total} = 20 ml Precipitation solvent = Petroleum spirit (bp.60-80°C) and Di ethyl ether (DEE)	45.5	0.1691	4.13

BMA= bromomaleic anhydride

DCMA= dichloromaleic anhydride

MI = maleimide

7.3. ^{13}C NMR spectra for the determination of triad distribution and the quantitative determination of linkages configurations.

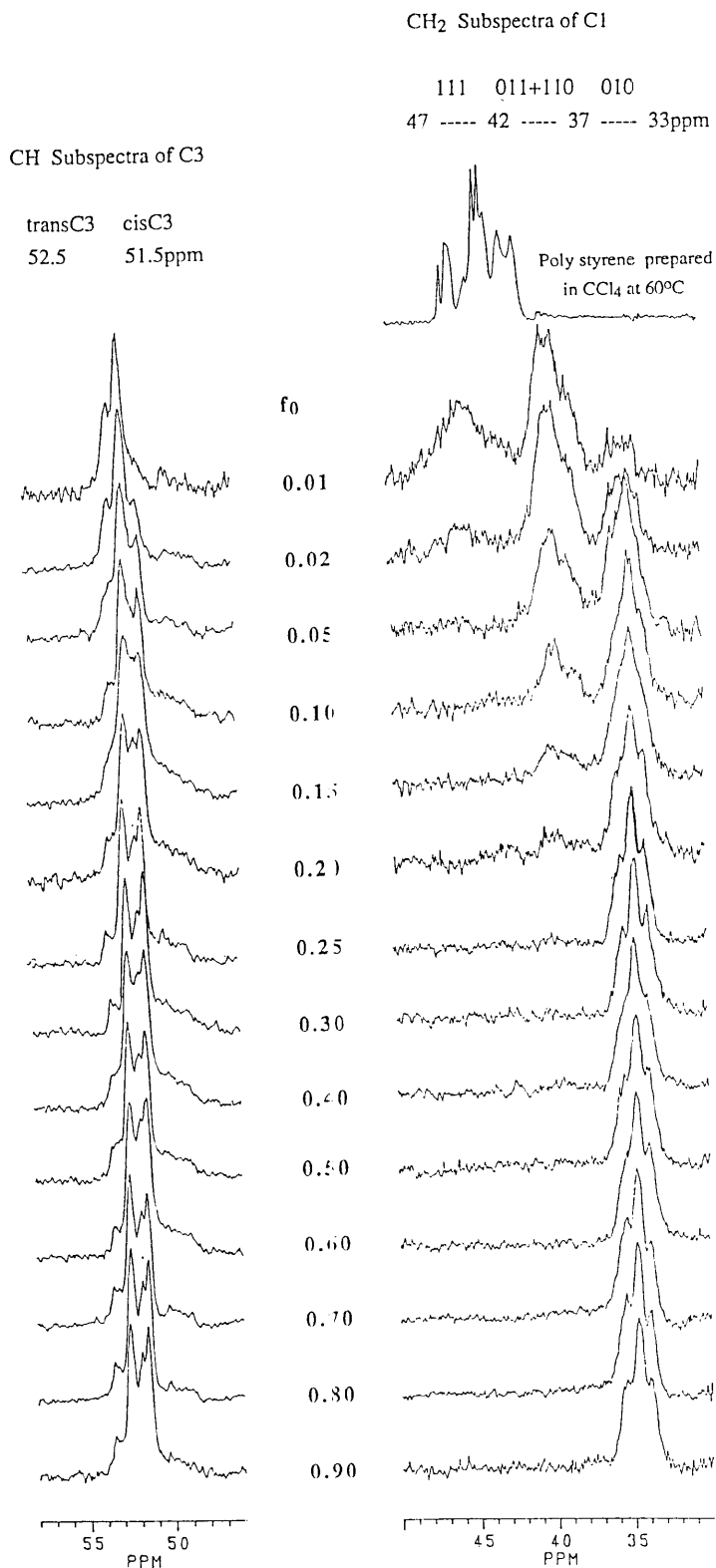


Fig.7.3.1 DEPT ^{13}C NMR subspectra of methine(CH) C3 and methylene(CH₂) C1.

[MA+ST]=4M/ CCl₄/ 50°C. f₀=0.01-0.90.

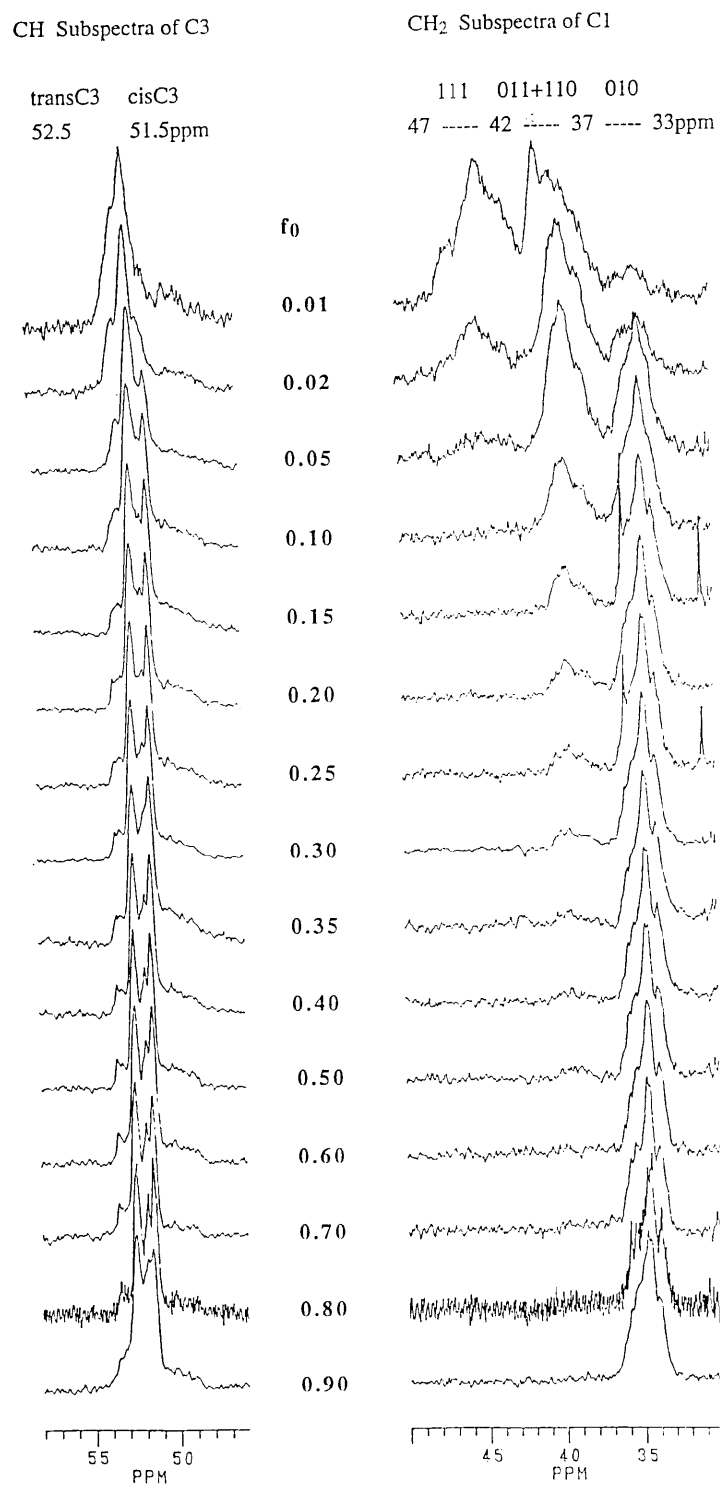


Fig.7.3.2 DEPT ^{13}C NMR subspectra of methine(CH) C3 and methylene(CH₂) C1.
[MA+ST]=4M/ DMF/ 50°C. $f_0=0.00-0.90$.

CH Subspectra of C3

CH₂ Subspectra of C1

trans C3 cis C3
52.5 51.5 ppm

111 011+110 010
47 ----- 42 ----- 37 ----- 32

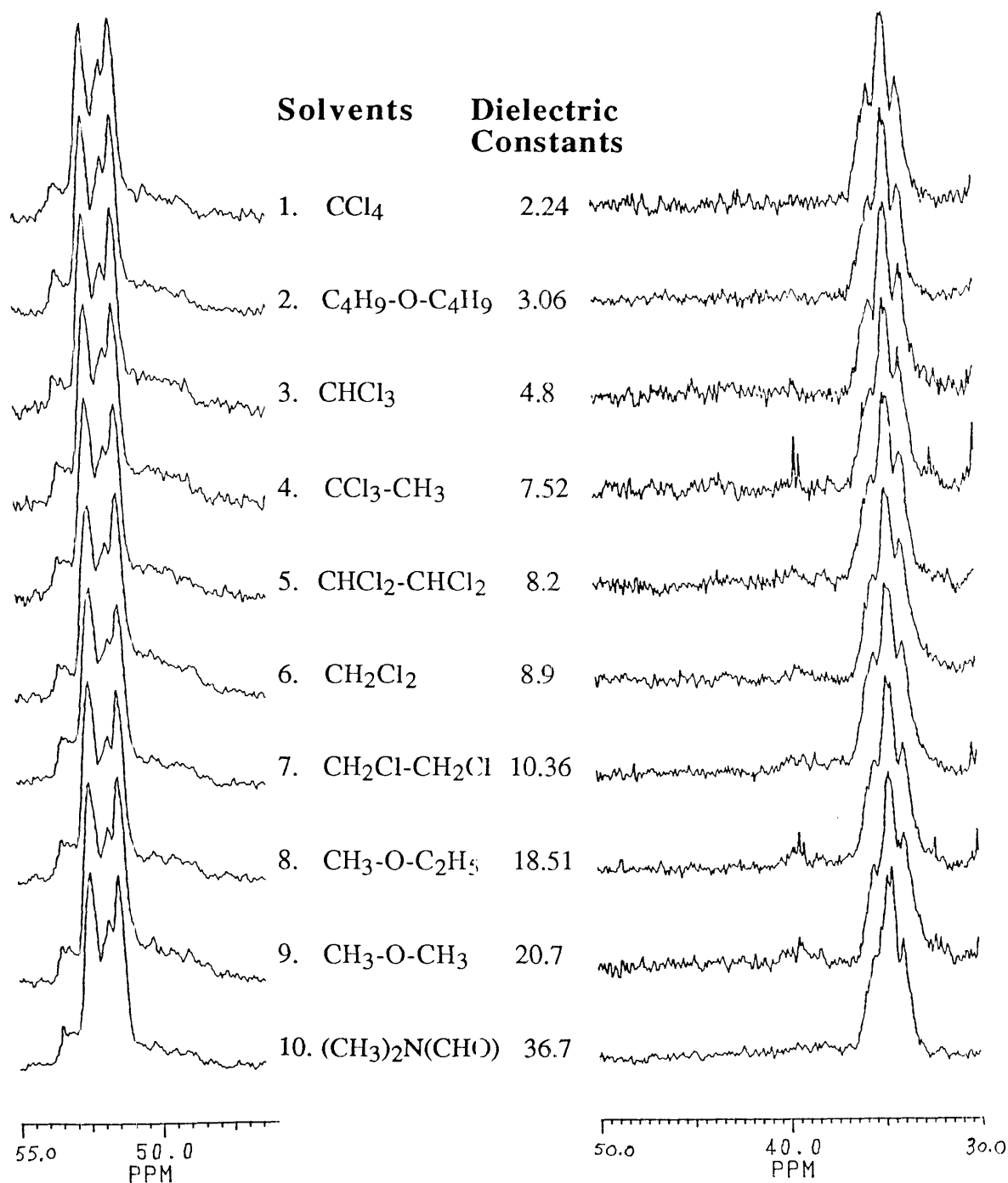


Fig.7.3.3 DEPT ¹³C NMR subspectra of methine(CH) C3 and methylene(CH₂) C1.

[MA]=[ST]=1M, polymerized in solvent with dielectric constant ranges $\epsilon = 2.24$ - 36.7 at 50°C.

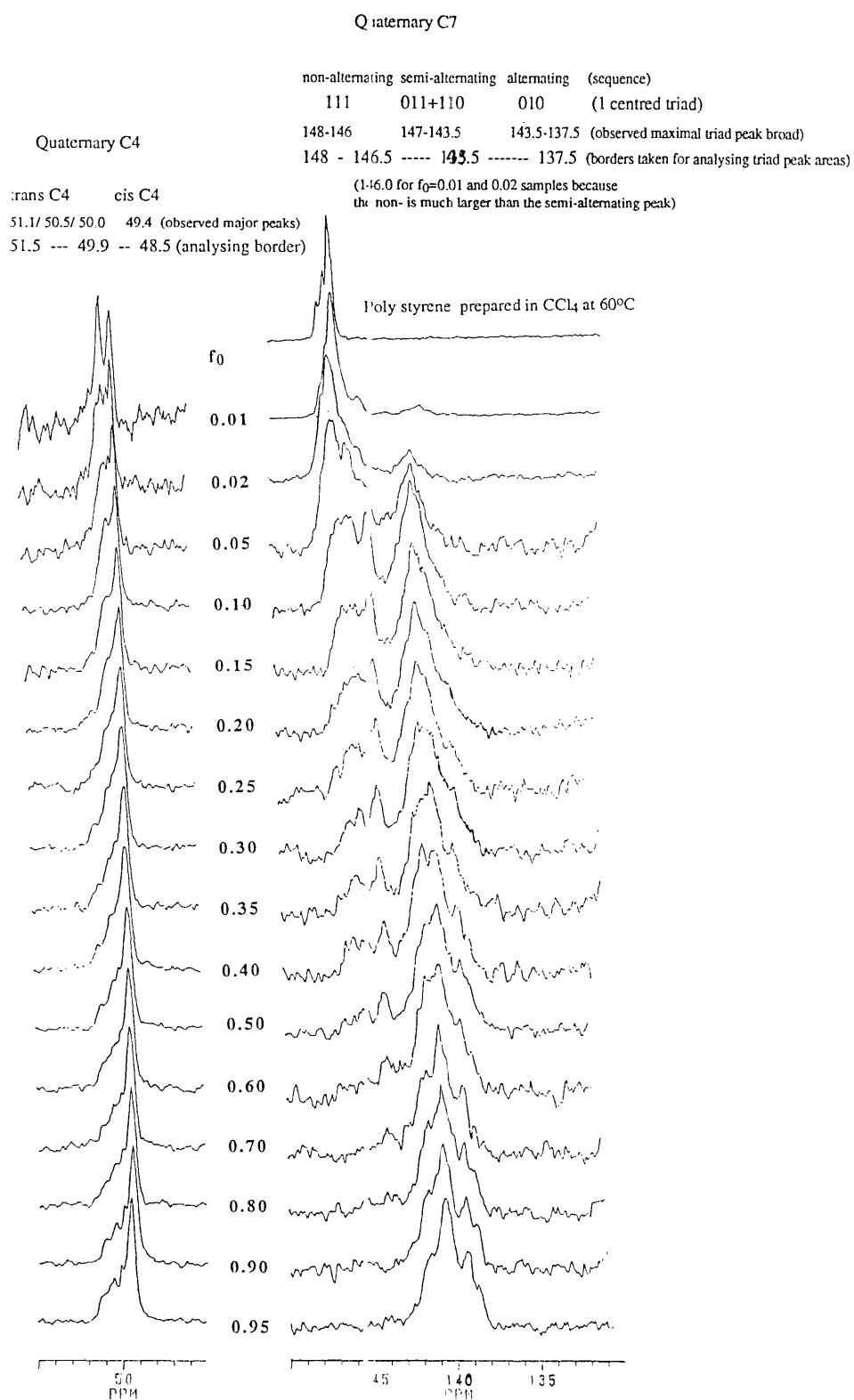


Fig.7.3.4 Quaternary ^{13}C NMR spectra of C7 and C4 of CA(0) -ST(1) copolymer.
 [CA+ST]=4M/ CCl₄ / 50°C. $f_0=0.01-0.95$.

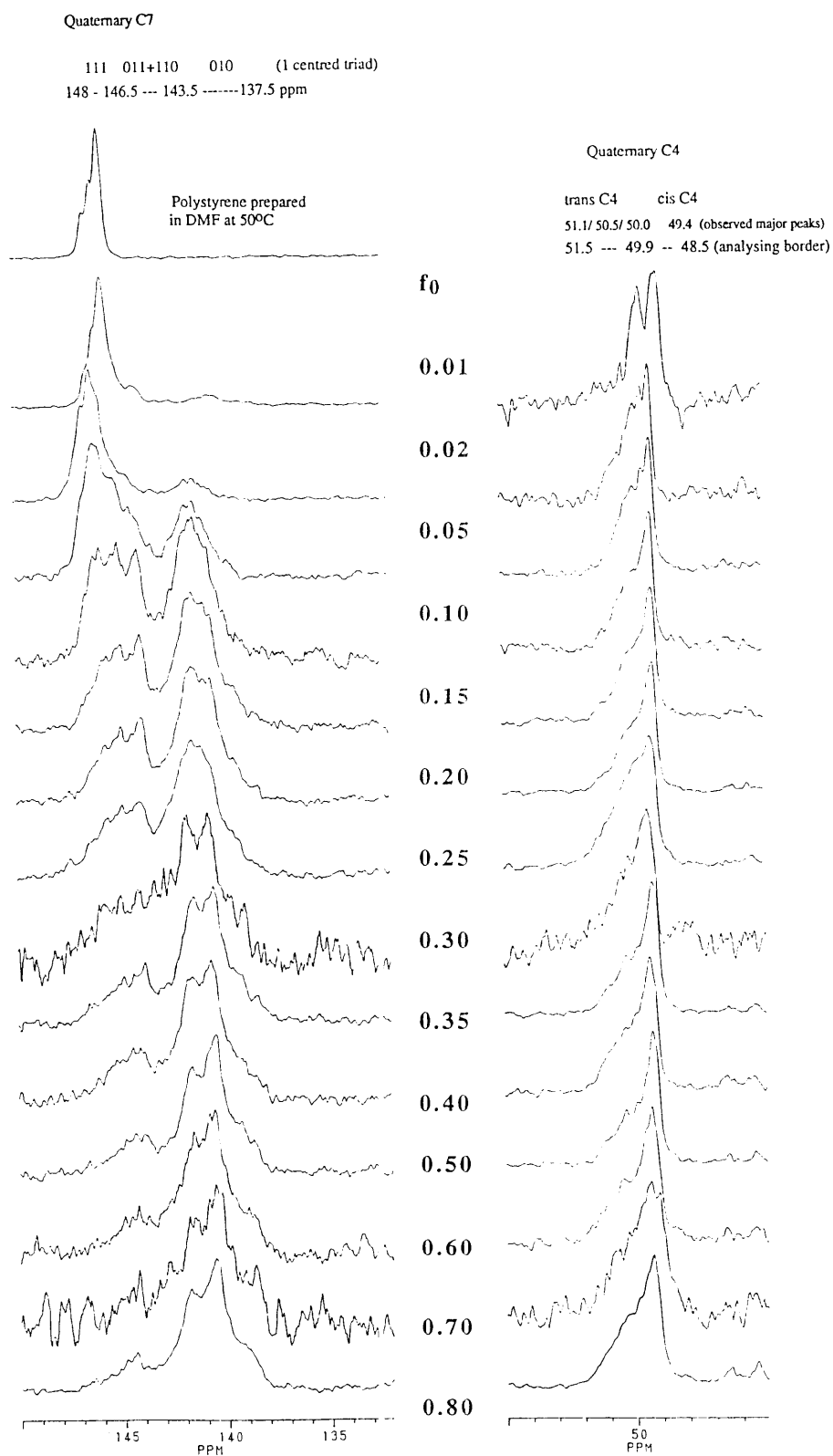


Fig.7.3.5 Quaternary ^{13}C NMR spectra of C7 and C4 of CA(0) -ST(1) copolymer.
[CA+ST]=4M/ DMF / 50°C. $f_0=0.00-0.80$.

7.4. The numerical data of the mole fraction of the triads and the overall copolymer composition.

Scheme 3 : Restrictions for setting the initial estimates of the reactivity ratios in the five models due to the non-homopropagation of monomer 0

						Number of variable parameters
1. Terminal Model	<u>$r_0=0$</u>		r_1			1
2. Penultimate Model	<u>$r_{00}=r_{10}=0$</u>		r_{11}	r_{01}		2
3. Complex Participation Model	<u>K determined independently</u>					
	<u>$r_0=q_0=0$</u>	s_0	r_1	q_1	s_1	4
4. Complex Dissociation Model	<u>K determined independently</u>					
	<u>$r_0=q_0=0$</u>	s_0	r_1	q_1	s_1	4
5. Comppen Model	<u>K determined independently</u>					7
	<u>$r_{00}=r_{10}=0$</u>		r_{11}	r_{01}		
	<u>$q_{00}=q_{10}=0$</u>		q_{11}	q_{01}		
	<u>$s_{00}=0$</u>	s_{10}	s_{11}	s_{01}		
If there's no penultimate effect, Comppen model reduces to Complex-participation model						
	<u>$r_{00}=r_{10}=r_0=0$</u>		$r_{11}=r_{01}=r_1$			
	<u>$q_{00}=q_{10}=q_0=0$</u>		$q_{11}=q_{01}=q_1$			
	<u>$s_{00}=s_{10}=s_0=0$</u>		$s_{11}=s_{01}=s_1$			
If there's no complex addition, Comppen model reduces to Penultimate model						
	<u>$r_{00}=r_{10}=0$</u>		r_{11}	r_{01}		
Reactivity ratios involved complex equal zero:						
	<u>$q_{00}=q_{10}=q_{11}=q_{01}=0$</u>					
	<u>$s_{00}=s_{10}=s_{11}=s_{01}=0$</u>					

underlined means fix initial estimate

Tab.7.4.1. The experimental and the for 5 models calculated triad and composition data of MA-ST copolymer prepared in CCl_4 . The triad mole fractions were determined from DEPT ^{13}C NMR CH_2 -subspectra of C1. $K=0.208(\text{l/mol})$.

f_0	F_{010} exp	1	2	3	4	5	$F_{(011+110)}$ exp	1	2	3	4	5
0.01	0.0988	0.1195	0.1016	0.1007	0.1057	0.1479	0.5117	0.4556	0.5337	0.4338	0.4379	0.5700
0.02	0.2742	0.2666	0.2486	0.2381	0.2461	0.2661	0.5822	0.4992	0.5508	0.4987	0.4999	0.5411
0.05	0.5270	0.5381	0.5385	0.5185	0.5245	0.5061	0.4530	0.3880	0.4117	0.4016	0.4005	0.4224
0.10	0.6810	0.7279	0.7374	0.7308	0.7302	0.7117	0.2980	0.2477	0.2617	0.2492	0.2497	0.2732
0.15	0.8030	0.8140	0.8238	0.8297	0.8248	0.8149	0.1950	0.1742	0.1843	0.1656	0.1676	0.1840
0.20	0.8360	0.8630	0.8716	0.8853	0.8780	0.8738	0.1310	0.1302	0.1380	0.1159	0.1187	0.1287
0.25	0.9855	0.8944	0.9019	0.9200	0.9114	0.9106	0.0145	0.1012	0.1074	0.0838	0.0870	0.0927
0.30	1.0000	0.9164	0.9227	0.9431	0.9340	0.9349	0.0000	0.0806	0.0856	0.0620	0.0652	0.0682
0.40	0.9800	0.9450	0.9495	0.9703	0.9617	0.9637	0.0200	0.0534	0.0568	0.0351	0.0381	0.0385
0.50	1.0000	0.9628	0.9660	0.9843	0.9772	0.9791	0.0000	0.0363	0.0386	0.0203	0.0228	0.0223
0.60	1.0000	0.9750	0.9772	0.9918	0.9865	0.9880	0.0000	0.0245	0.0261	0.0116	0.0135	0.0129
0.70	1.0000	0.9838	0.9853	0.9959	0.9923	0.9933	0.0000	0.0159	0.0169	0.0064	0.0077	0.0072
0.80	1.0000	0.9905	0.9914	0.9981	0.9960	0.9966	0.0000	0.0093	0.0099	0.0032	0.0040	0.0037
0.90	1.0000	0.9958	0.9962	0.9994	0.9984	0.9987	0.0000	0.0042	0.0044	0.0012	0.0016	0.0014

f_0	F_{111} exp	1	2	3	4	5	F_0 exp	1	2	3	4	5
0.01	0.3895	0.3567	0.3893	0.3894	0.3586	0.2317	0.2618	0.2688	0.2670	0.2691	0.2677	0.3288
0.02	0.1437	0.1792	0.1436	0.1433	0.1782	0.1775	0.3611	0.3507	0.3511	0.3503	0.3503	0.3586
0.05	0.0180	0.0491	0.0257	0.0255	0.0462	0.0957	0.4297	0.4291	0.4307	0.4283	0.4298	0.4072
0.10	0.0200	0.0141	0.0060	0.0059	0.0119	0.0447	0.4536	0.4637	0.4650	0.4633	0.4649	0.4449
0.15	0.0020	0.0061	0.0024	0.0024	0.0046	0.0240	0.4738	0.4765	0.4775	0.4766	0.4778	0.4638
0.20	0.0340	0.0032	0.0012	0.0012	0.0021	0.0138	0.4741	0.4832	0.4839	0.4837	0.4845	0.4748
0.25	0.0000	0.0018	0.0007	0.0007	0.0011	0.0081	0.4982	0.4873	0.4879	0.4881	0.4886	0.4819
0.30	0.0000	0.0011	0.0004	0.0004	0.0006	0.0049	0.5000	0.4901	0.4905	0.4910	0.4913	0.4866
0.40	0.0000	0.0005	0.0002	0.0002	0.0002	0.0018	0.4975	0.4936	0.4939	0.4947	0.4946	0.4924
0.50	0.0000	0.0002	0.0001	0.0001	0.0001	0.0007	0.5000	0.4957	0.4959	0.4968	0.4966	0.4956
0.60	0.0000	0.0001	0.0000	0.0001	0.0000	0.0002	0.5000	0.4971	0.4973	0.4980	0.4978	0.4975
0.70	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	0.5000	0.4981	0.4982	0.4989	0.4986	0.4986
0.80	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.5000	0.4989	0.4990	0.4994	0.4992	0.4993
0.90	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.5000	0.4995	0.4995	0.4998	0.4997	0.4997

1 = Terminal model

2 = Penultimate Unit Effect model

3 = Complex Participation model

4 = Complex Dissociation model

5 = Comppen model

Tab.7.4.2. The experimental and the for 5 models calculated triad and composition data of MA-ST copolymer prepared in DMF. The triad mole fractions were determined from DEPT ^{13}C NMR CH_2 -subspectra of C1. $K=0.035(\text{l/mol})$.

f_0	F_{010} exp	1	2	3	4	5	$F_{(011+110)}$ exp	1	2	3	4	5
0.00	0.0000						0.0000					
0.01	0.0735	0.0820	0.0566	0.0656	0.0787	0.1236	0.4600	0.4121	0.4923	0.4061	0.4069	0.5602
0.02	0.1893	0.2004	0.1633	0.1716	0.1948	0.2263	0.5916	0.4955	0.5573	0.4938	0.4941	0.5409
0.05	0.4160	0.4575	0.4426	0.4315	0.4523	0.4460	0.5290	0.4347	0.4689	0.4379	0.4378	0.4500
0.10	0.6630	0.6647	0.6749	0.6621	0.6635	0.6486	0.3310	0.2975	0.3199	0.2988	0.2987	0.3198
0.15	0.7810	0.7659	0.7817	0.7779	0.7675	0.7574	0.2190	0.2153	0.2324	0.2141	0.2143	0.2333
0.20	0.8440	0.8254	0.8413	0.8449	0.8286	0.8231	0.1570	0.1636	0.1772	0.1607	0.1610	0.1755
0.25	0.8700	0.8645	0.8790	0.8875	0.8686	0.8662	0.1300	0.1284	0.1394	0.1244	0.1248	0.1353
0.30	0.9020	0.8921	0.9049	0.9162	0.8967	0.8963	0.0980	0.1030	0.1121	0.0984	0.0989	0.1062
0.35	0.9680	0.9127	0.9238	0.9365	0.9175	0.9183	0.0320	0.0838	0.0914	0.0789	0.0794	0.0845
0.40	0.9580	0.9285	0.9381	0.9513	0.9334	0.9348	0.0420	0.0689	0.0752	0.0639	0.0644	0.0678
0.50	0.9650	0.9515	0.9585	0.9708	0.9560	0.9579	0.0350	0.0470	0.0514	0.0423	0.0428	0.0442
0.60	1.0000	0.9673	0.9722	0.9825	0.9711	0.9728	0.0000	0.0319	0.0349	0.0278	0.0282	0.0286
0.70	1.0000	0.9788	0.9821	0.9898	0.9817	0.9831	0.0000	0.0207	0.0227	0.0176	0.0179	0.0178
0.80	1.0000	0.9875	0.9895	0.9946	0.9896	0.9905	0.0000	0.0122	0.0134	0.0100	0.0102	0.0101
0.90	1.0000	0.9944	0.9953	0.9978	0.9955	0.9959	0.0000	0.0055	0.0060	0.0043	0.0045	0.0043

f_0	F_{111} exp	1	2	3	4	5	F_0 exp	1	2	3	4	5
0.00	1.0000						0.0000					
0.01	0.4666	0.4374	0.4665	0.4659	0.4381	0.2507	0.2328	0.2353	0.2349	0.2342	0.2346	0.3204
0.02	0.2191	0.2416	0.2198	0.2214	0.2416	0.2033	0.3266	0.3212	0.3212	0.3206	0.3208	0.3476
0.05	0.0540	0.0743	0.0497	0.0474	0.0735	0.1234	0.4049	0.4112	0.4116	0.4117	0.4115	0.3934
0.10	0.0060	0.0227	0.0126	0.0112	0.0219	0.0667	0.4531	0.4536	0.4539	0.4548	0.4543	0.4310
0.15	0.0000	0.0101	0.0052	0.0045	0.0095	0.0408	0.4710	0.4698	0.4700	0.4711	0.4706	0.4512
0.20	0.0000	0.0054	0.0026	0.0023	0.0049	0.0265	0.4798	0.4783	0.4785	0.4797	0.4792	0.4637
0.25	0.0000	0.0031	0.0015	0.0013	0.0028	0.0179	0.4832	0.4835	0.4837	0.4849	0.4844	0.4721
0.30	0.0000	0.0019	0.0009	0.0008	0.0017	0.0123	0.4874	0.4871	0.4872	0.4884	0.4879	0.4782
0.35	0.0000	0.0012	0.0006	0.0005	0.0011	0.0085	0.4960	0.4897	0.4898	0.4910	0.4905	0.4826
0.40	0.0000	0.0008	0.0004	0.0003	0.0007	0.0060	0.4947	0.4916	0.4917	0.4928	0.4924	0.4861
0.50	0.0000	0.0004	0.0002	0.0002	0.0003	0.0029	0.4956	0.4944	0.4944	0.4954	0.4950	0.4909
0.60	0.0000	0.0002	0.0001	0.0001	0.0001	0.0013	0.5000	0.4962	0.4963	0.4971	0.4968	0.4942
0.70	0.0000	0.0001	0.0000	0.0000	0.0000	0.0006	0.5000	0.4976	0.4976	0.4982	0.4980	0.4964
0.80	0.0000	0.0000	0.0000	0.0000	0.0000	0.0002	0.5000	0.4986	0.4986	0.4990	0.4988	0.4980
0.90	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.5000	0.4994	0.4994	0.4996	0.4995	0.4991

1 = Terminal model

2 = Penultimate Unit Effect model

3 = Complex Participation model

4 = Complex Dissociation model

5 = Comppen model

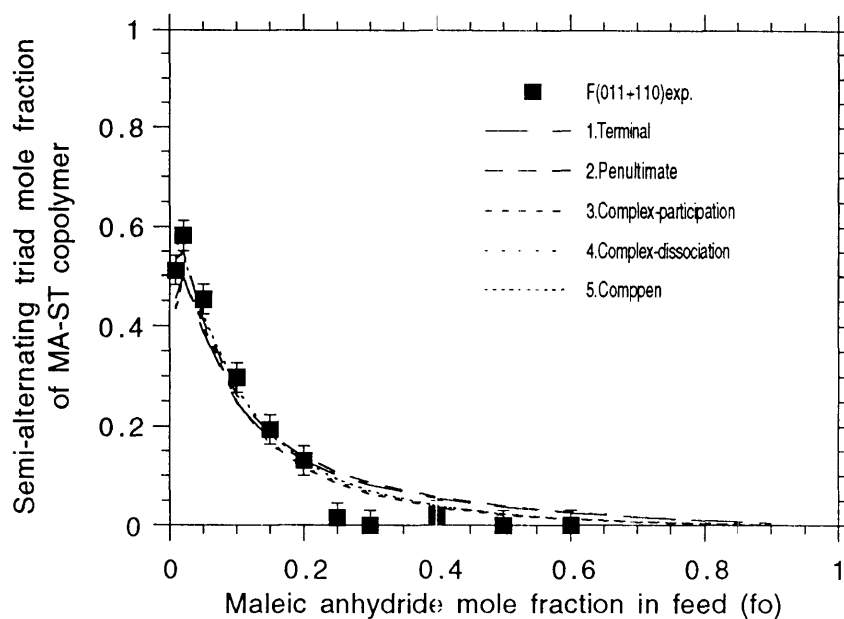


Fig.7.4.1 NLLS curve fitting of $F(011+110)$ experimental data to 5 models. (MA+ST/ CCl_4)

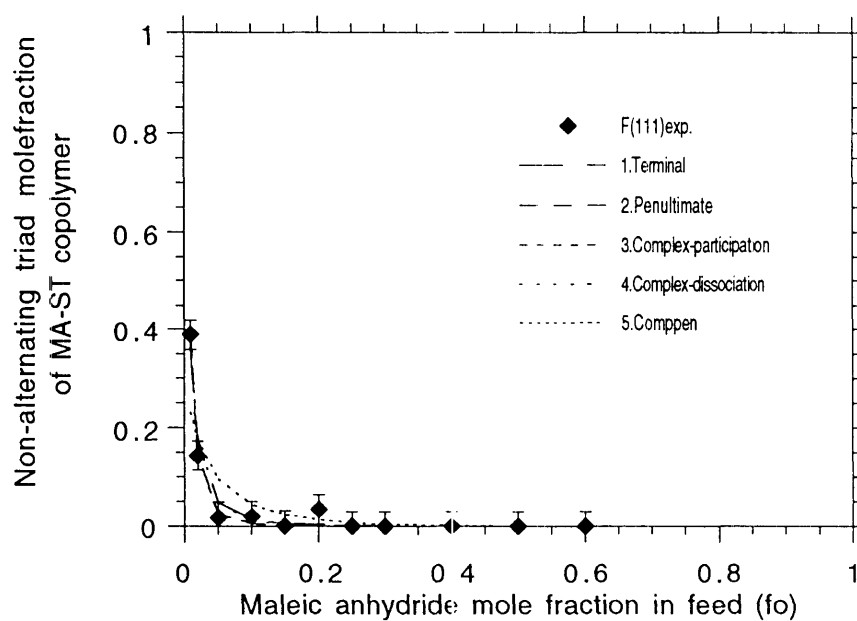


Fig.7.4.2 NLLS curve fitting of F_{111} experimental data to 5 models. (MA+ST/ CCl_4)

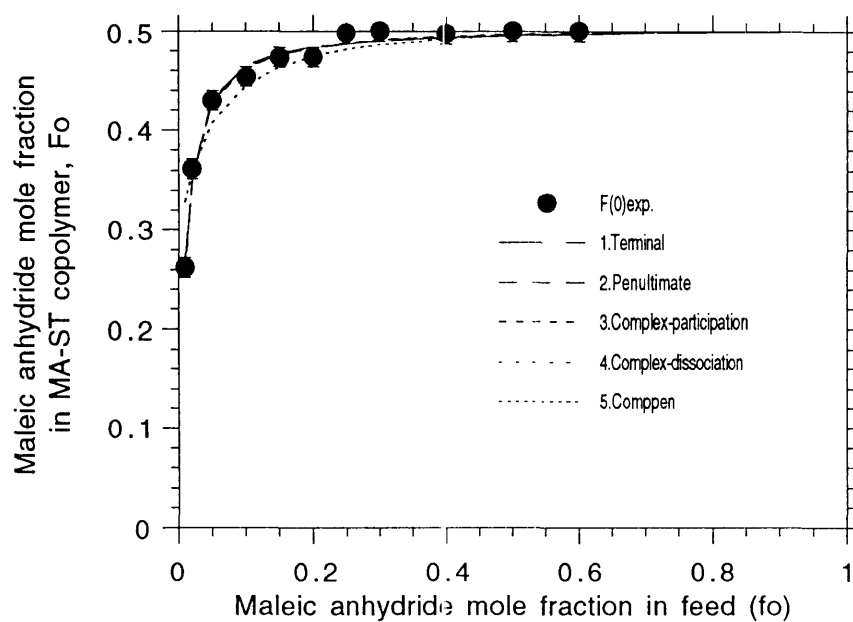


Fig.7.4.3 NLLS curve fitting of F_0 experimental data to 5 models. (MA+ST/CCl₄)

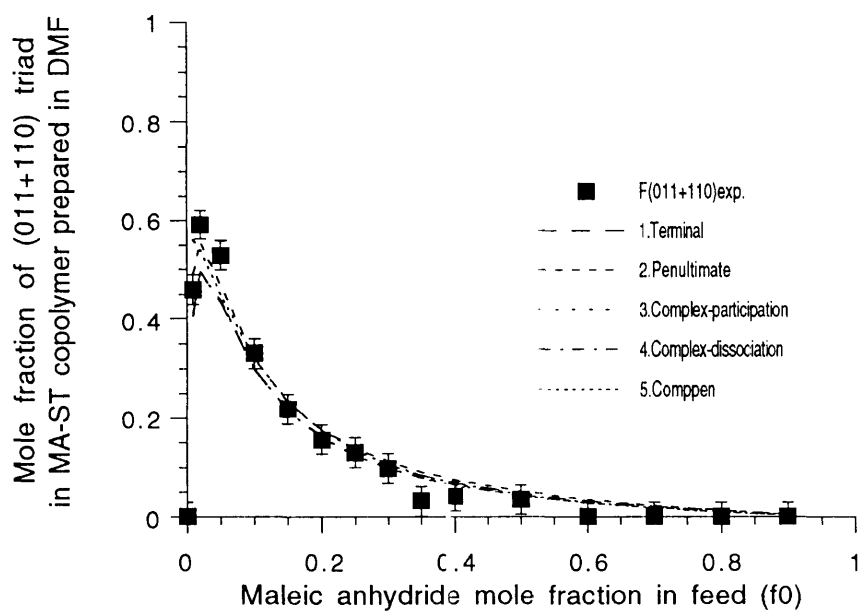


Fig.7.4.4 NLLS curve fitting of $F_{(011+110)}$ experimental data to 5 models. (MA+ST/DMF)

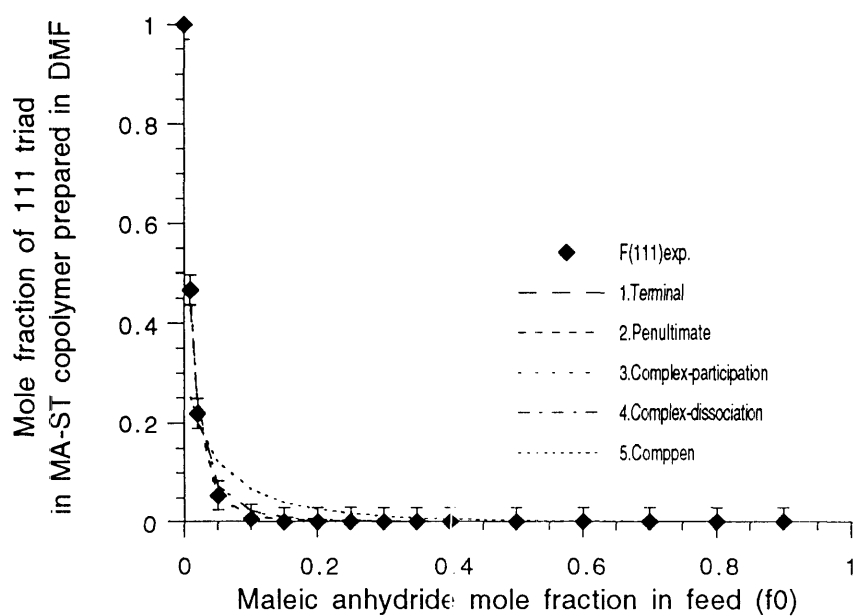


Fig.7.4.5 NLLS curve fitting of F_{111} experimental data to 5 models. (MA+ST/DMF)

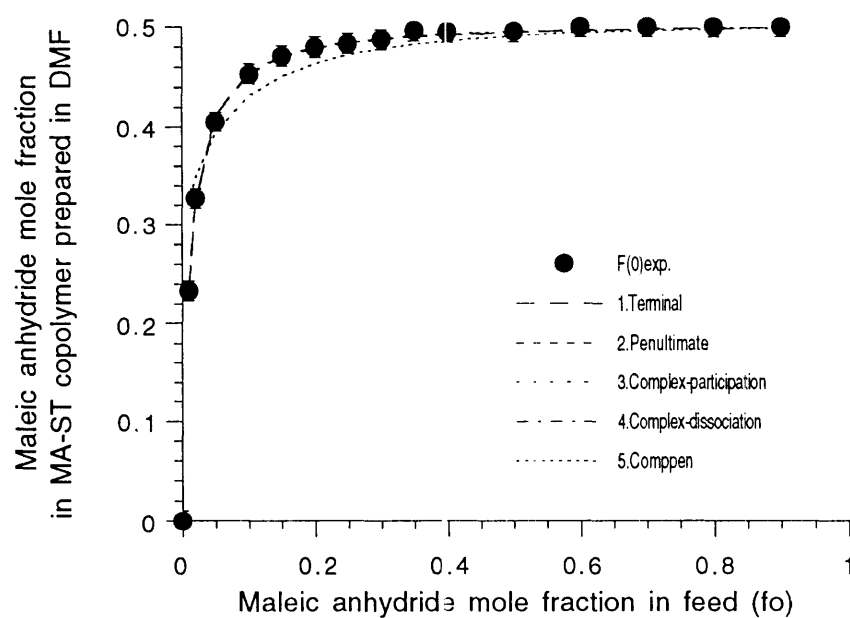


Fig.7.4.6 NLLS curve fitting of F_0 experimental data to 5 models. (MA+ST/DMF)

Tab.7.4.3. The experimental and the for 5 models calculated triad and composition data of CA-ST copolymer prepared in CCl_4 . The triad mole fractions were determined from Quaternary ^{13}C NMR spectra of C7. $K=0.142(\text{l/mol})$.

f_0	F_{010} exp	1	2	3	4	5	$F_{(011+110)}$ exp	1	2	3	4	5
0.01	0.1000	0.0261	0.0735	0.0654	0.0659	0.1007	0.2533	0.2400	0.1659	0.3247	0.2921	0.3213
0.02	0.1780	0.0786	0.1381	0.1579	0.1587	0.1755	0.3320	0.3717	0.2763	0.3221	0.4213	0.3197
0.05	0.3380	0.2511	0.2924	0.3565	0.3570	0.3392	0.3305	0.4964	0.4172	0.3143	0.4992	0.3143
0.10	0.4940	0.4617	0.4660	0.5202	0.5198	0.5015	0.3420	0.4604	0.4172	0.3007	0.4319	0.3035
0.15	0.6110	0.5945	0.5809	0.6063	0.6057	0.5986	0.2830	0.3858	0.3587	0.2865	0.3589	0.2906
0.20	0.6540	0.6834	0.6625	0.6625	0.6618	0.6638	0.3050	0.3195	0.3001	0.2718	0.3029	0.2759
0.25	0.6940	0.7467	0.7236	0.7041	0.7035	0.7110	0.2830	0.2654	0.2505	0.2565	0.2605	0.2597
0.30	0.7770	0.7940	0.7709	0.7375	0.7372	0.7471	0.2205	0.2217	0.2096	0.2407	0.2277	0.2425
0.35	0.7840	0.8305	0.8087	0.7660	0.7660	0.7760	0.2115	0.1860	0.1759	0.2243	0.2014	0.2245
0.40	0.7810	0.8596	0.8396	0.7912	0.7914	0.8000	0.2100	0.1564	0.1479	0.2076	0.1800	0.2062
0.50	0.8595	0.9029	0.8870	0.8353	0.8359	0.8388	0.1360	0.1105	0.1044	0.1730	0.1464	0.1694
0.60	0.8590	0.9336	0.9217	0.8740	0.8749	0.8708	0.1340	0.0766	0.0723	0.1374	0.1202	0.1336
0.70	0.8960	0.9566	0.9482	0.9091	0.9101	0.9001	0.1030	0.0507	0.0478	0.1016	0.0975	0.0994
0.80	0.9030	0.9743	0.9691	0.9416	0.9424	0.9296	0.0970	0.0302	0.0285	0.0663	0.0745	0.0664
0.90	0.9880	0.9885	0.9860	0.9718	0.9723	0.9620	0.0250	0.0137	0.0129	0.0322	0.0464	0.0338
0.95	0.9910	0.9945	0.9933	0.9861	0.9864	0.9801	0.0090	0.0065	0.0061	0.0158	0.0271	0.0172

f_0	F_{111} exp	1	2	3	4	5	F_0 exp	1	2	3	4	5
0.01	0.6460	0.7175	0.6780	0.6799	0.6849	0.3109	0.1848	0.1559	0.1832	0.1809	0.1728	0.2916
0.02	0.4900	0.5368	0.5070	0.5071	0.5075	0.2907	0.2560	0.2389	0.2548	0.2550	0.2535	0.3098
0.05	0.3310	0.2654	0.2768	0.2743	0.2688	0.2403	0.3348	0.3512	0.3428	0.3458	0.3528	0.3459
0.10	0.1635	0.1121	0.1446	0.1425	0.1402	0.1798	0.3994	0.4164	0.3984	0.4011	0.4070	0.3827
0.15	0.1060	0.0579	0.0900	0.0892	0.0905	0.1379	0.4294	0.4439	0.4259	0.4273	0.4301	0.4077
0.20	0.0420	0.0334	0.0607	0.0610	0.0644	0.1075	0.4464	0.4590	0.4429	0.4432	0.4436	0.4263
0.25	0.0240	0.0206	0.0428	0.0439	0.0481	0.0847	0.4552	0.4686	0.4546	0.4539	0.4527	0.4407
0.30	0.0030	0.0133	0.0310	0.0327	0.0369	0.0673	0.4701	0.4753	0.4632	0.4617	0.4596	0.4521
0.35	0.0040	0.0089	0.0228	0.0248	0.0286	0.0537	0.4708	0.4801	0.4697	0.4677	0.4651	0.4613
0.40	0.0080	0.0060	0.0168	0.0191	0.0223	0.0430	0.4698	0.4838	0.4749	0.4724	0.4698	0.4687
0.50	0.0080	0.0028	0.0092	0.0116	0.0133	0.0274	0.4812	0.4891	0.4827	0.4794	0.4773	0.4797
0.60	0.0070	0.0013	0.0048	0.0070	0.0075	0.0170	0.4808	0.4927	0.4882	0.4845	0.4833	0.4872
0.70	0.0000	0.0005	0.0022	0.0040	0.0038	0.0101	0.4865	0.4953	0.4922	0.4885	0.4884	0.4923
0.80	0.0000	0.0002	0.0008	0.0020	0.0015	0.0053	0.4876	0.4972	0.4954	0.4920	0.4928	0.4958
0.90	0.0000	0.0000	0.0002	0.0006	0.0003	0.0020	0.5001	0.4988	0.4979	0.4956	0.4966	0.4983
0.95	0.0000	0.0000	0.0000	0.0002	0.0001	0.0008	0.4989	0.4994	0.4990	0.4976	0.4984	0.4993

1 = Terminal model

2 = Penultimate Unit Effect model

3 = Complex Participation model

4 = Complex Dissociation model

5 = Comppen model

Tab.7.4.4. The experimental and the for 5 models calculated triad and composition data of CA-ST copolymer prepared in DMF. The triad mole fractions were determined from Quaternary ^{13}C NMR spectra of C7. $K=0.021(\text{l/mol})$.

f_0	F_{010} exp	1	2	3	4	5	$F_{(011+110)}$ exp	1	2	3	4	5
0.01	0.1067	0.0215	0.0656	0.0581	0.0577	0.1037	0.1727	0.2275	0.1772	0.3313	0.3231	0.3184
0.02	0.1659	0.0663	0.1243	0.1448	0.1441	0.1706	0.3713	0.3577	0.2923	0.3286	0.3210	0.3243
0.05	0.3170	0.2229	0.2679	0.3403	0.3398	0.3228	0.4032	0.4927	0.4360	0.3204	0.3146	0.3268
0.10	0.4928	0.4274	0.4359	0.5062	0.5062	0.4804	0.3557	0.4695	0.4354	0.3067	0.3035	0.3170
0.15	0.5965	0.5624	0.5510	0.5923	0.5926	0.5776	0.2941	0.3991	0.3757	0.2929	0.2920	0.3028
0.20	0.6389	0.6552	0.6348	0.6466	0.6470	0.6435	0.2849	0.3336	0.3156	0.2789	0.2799	0.2873
0.25	0.6571	0.7224	0.6986	0.6854	0.6858	0.6912	0.2974	0.2789	0.2643	0.2648	0.2673	0.2711
0.30	0.7281	0.7731	0.7488	0.7156	0.7160	0.7273	0.2488	0.2341	0.2218	0.2504	0.2541	0.2546
0.35	0.7502	0.8127	0.7892	0.7407	0.7410	0.7557	0.2229	0.1970	0.1866	0.2359	0.2404	0.2379
0.40	0.7794	0.8444	0.8226	0.7627	0.7628	0.7786	0.1950	0.1661	0.1572	0.2210	0.2261	0.2209
0.50	0.8221	0.8919	0.8743	0.8014	0.8013	0.8136	0.1694	0.1178	0.1113	0.1904	0.1956	0.1866
0.60	0.8506	0.9259	0.9125	0.8373	0.8369	0.8396	0.1387	0.0820	0.0773	0.1580	0.1625	0.1515
0.70	0.8796	0.9514	0.9420	0.8731	0.8725	0.8606	0.1142	0.0543	0.0512	0.1236	0.1266	0.1155
0.80	0.8592	0.9712	0.9653	0.9110	0.9103	0.8804	0.1289	0.0324	0.0305	0.0864	0.0877	0.0784

f_0	F_{111} exp	1	2	3	4	5	F_0 exp	1	2	3	4	5
0.01	0.7206	0.7088	0.6736	0.6829	0.6838	0.3086	0.1618	0.1503	0.1762	0.1681	0.1681	0.2920
0.02	0.4629	0.5255	0.5024	0.5045	0.5043	0.2868	0.2601	0.2324	0.2478	0.2484	0.2484	0.3104
0.05	0.2798	0.2555	0.2742	0.2642	0.2626	0.2346	0.3415	0.3456	0.3370	0.3485	0.3485	0.3459
0.10	0.1116	0.1064	0.1440	0.1351	0.1344	0.1758	0.4014	0.4127	0.3939	0.4035	0.4035	0.3809
0.15	0.1094	0.0546	0.0903	0.0861	0.0865	0.1369	0.4265	0.4412	0.4222	0.4266	0.4266	0.4041
0.20	0.0762	0.0314	0.0615	0.0610	0.0621	0.1093	0.4386	0.4570	0.4398	0.4399	0.4399	0.4212
0.25	0.0455	0.0193	0.0437	0.0460	0.0472	0.0888	0.4462	0.4671	0.4520	0.4488	0.4488	0.4345
0.30	0.0232	0.0124	0.0319	0.0360	0.0372	0.0730	0.4602	0.4740	0.4610	0.4554	0.4554	0.4451
0.35	0.0270	0.0082	0.0236	0.0288	0.0299	0.0604	0.4628	0.4791	0.4679	0.4607	0.4607	0.4538
0.40	0.0257	0.0056	0.0176	0.0234	0.0242	0.0502	0.4672	0.4830	0.4734	0.4651	0.4651	0.4611
0.50	0.0086	0.0026	0.0097	0.0158	0.0159	0.0347	0.4756	0.4885	0.4816	0.4724	0.4724	0.4725
0.60	0.0108	0.0012	0.0051	0.0105	0.0100	0.0236	0.4792	0.4923	0.4874	0.4786	0.4786	0.4810
0.70	0.0000	0.0005	0.0024	0.0066	0.0057	0.0153	0.4837	0.4950	0.4917	0.4843	0.4843	0.4875
0.80	0.0120	0.0002	0.0009	0.0035	0.0026	0.0090	0.4802	0.4971	0.4951	0.4896	0.4896	0.4926

1 = Terminal model

2 = Penultimate Unit Effect model

3 = Complex Participation model

4 = Complex Dissociation model

5 = Comppen model

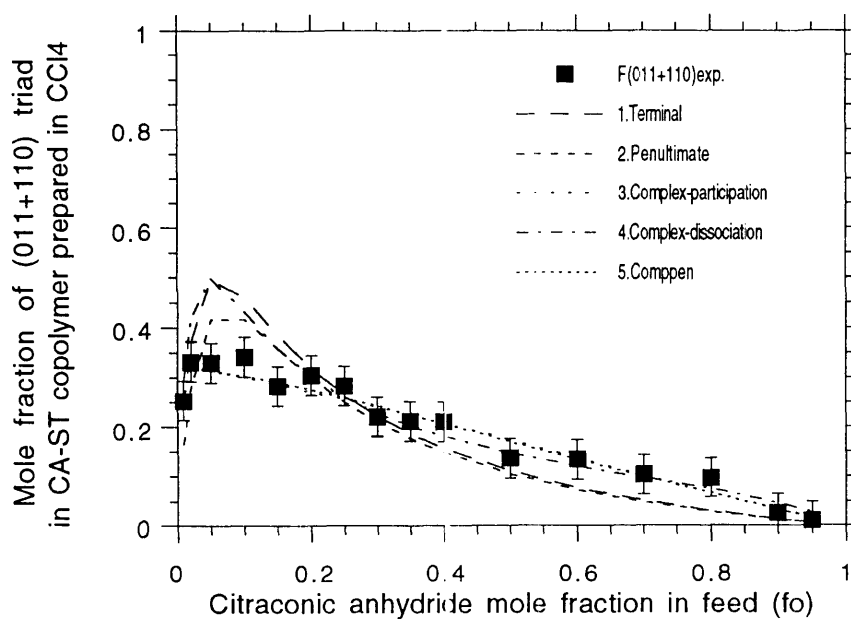


Fig.7.4.7 NLLS curve fitting of $F(011+110)$ experimental data to 5 models. (CA+ST/CCl₄)

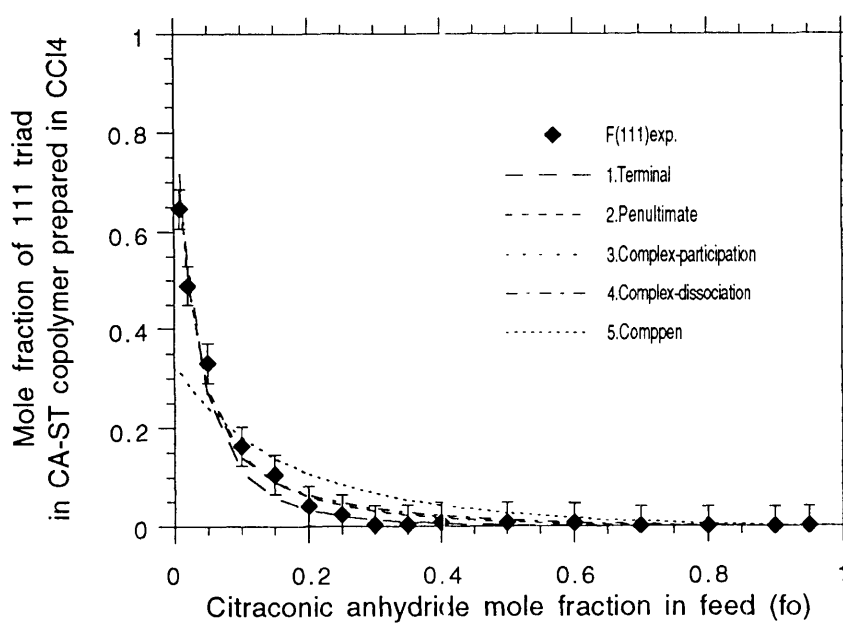


Fig.7.4.8 NLLS curve fitting of F_{111} experimental data to 5 models. (CA+ST/CCl₄)

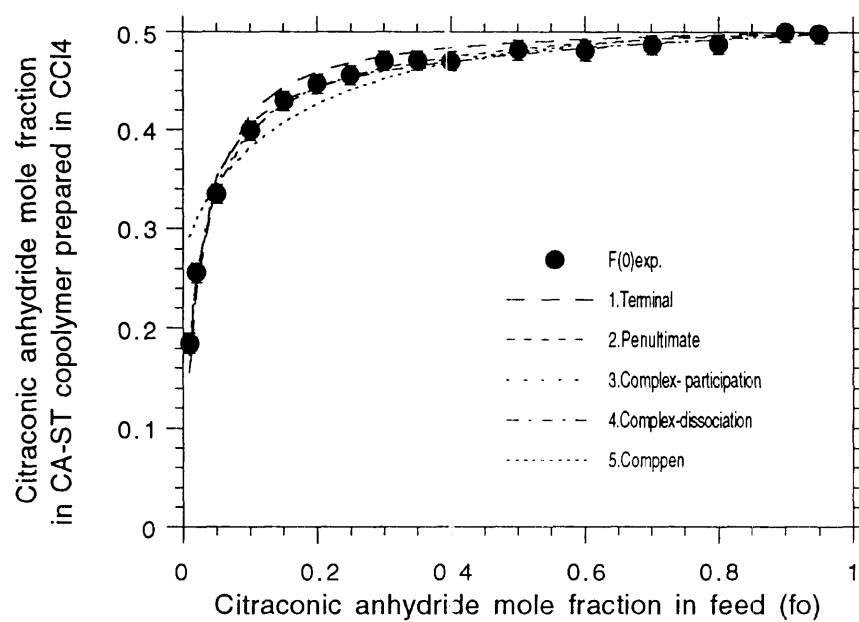


Fig.7.4.9 NLLS curve fitting of F_0 experimental data to 5 models. (CA+ST/CCl₄)

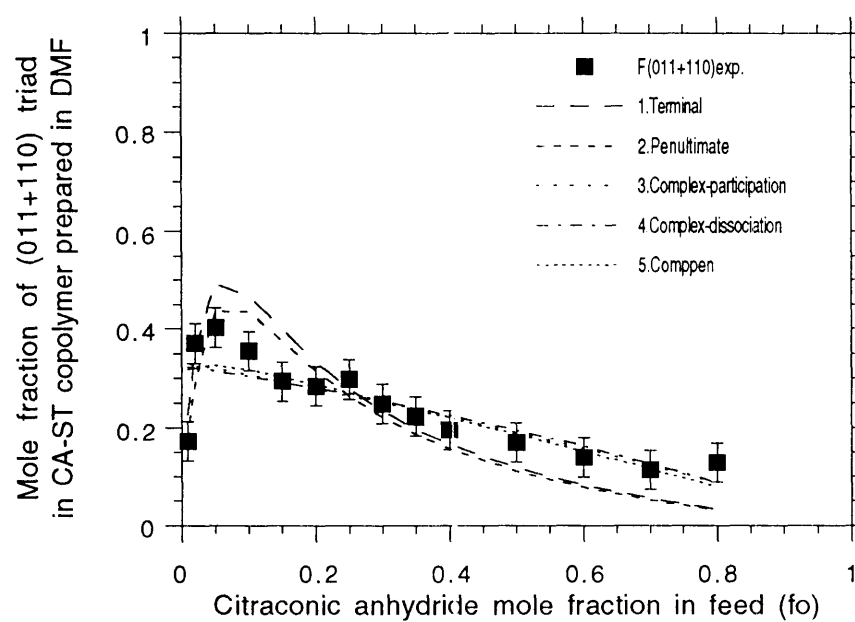


Fig.7.4.10 NLLS curve fitting of $F_{(011+110)}$ experimental data to 5 models. (CA+ST/DMF)

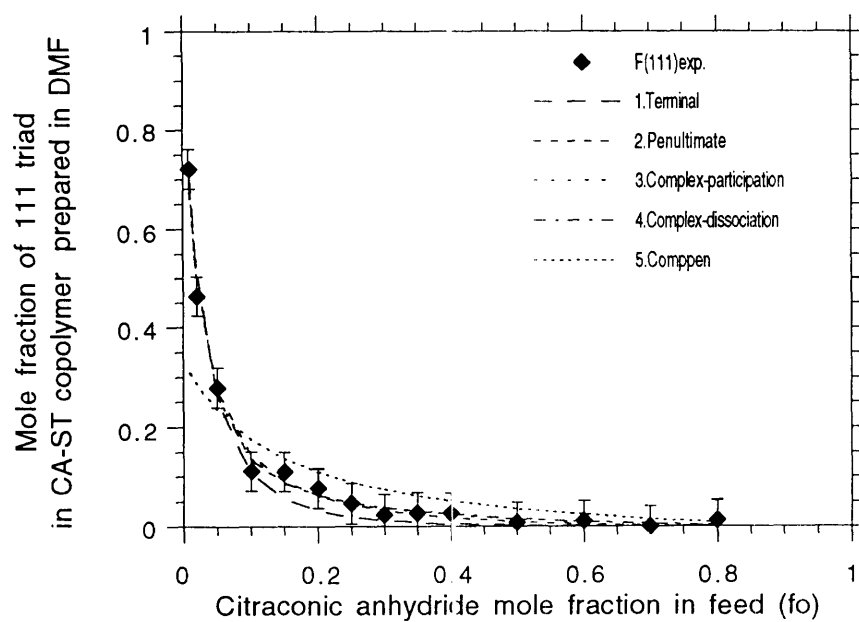


Fig.7.4.11 NLLS curve fitting of F_{111} experimental data to 5 models. (CA+ST/ DMF)

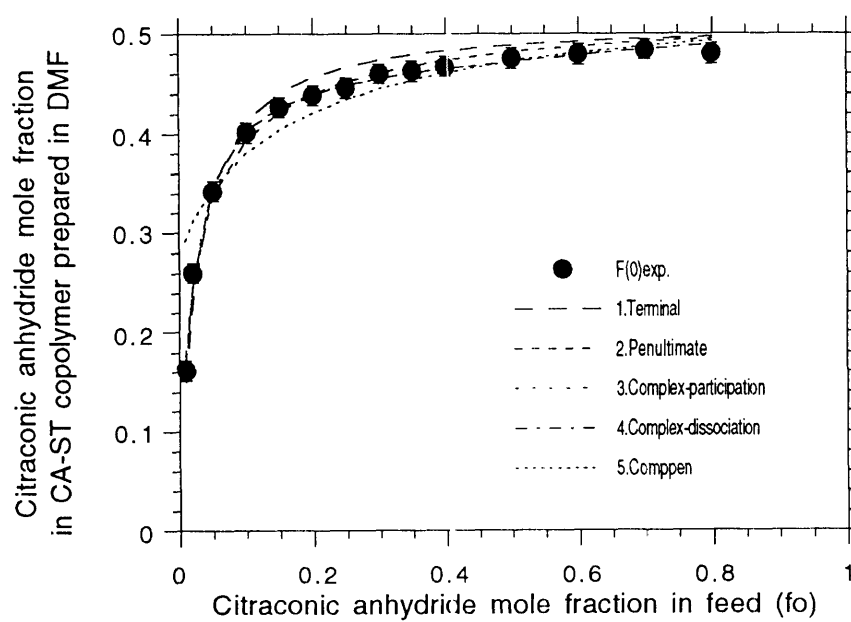


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MA-ST copolymers prepared in CCl_4 and in DMF. The triad mole fractions were determined from DEPT ^{13}C NMR CH_2 -subspectra of C1.

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Abbreviations

Donor monomer

AB = allylbenzene
 BVE = n-butyl vinyl ether
 CEV = 2-chloroethyl vinyl ether
 MST = α -methylstyrene
 ST = styrene
 STI = *trans* stilbene

Solvent

CCl₄ = carbon tetrachloride
 CDCl₃ = chloroform-d
 CHCl₃ = chloroform
 DEE = diethyl ether
 DMF = N,N-dimethylformamide
 DMSO-d₆ = dimethylsulfoxide-d₆
 MEK = methyl ethyl ketone

Acceptor monomer

BMA = bromomaleic anhydride
 CA = citraconic anhydride
 CMA = chloromaleic anhydride
 DCMA = dichloromaleic anhydride
 MA = maleic anhydride
 MI = maleimide

Other

AIBN = N,N'-azobisisobutyronitrile
 EDA = electron donor-acceptor
 DEPT = Distortionless Enhancement
 by Polarisation Transfer
 FID = Free Induction Decay
 NMR = Nuclear Magnetic Resonance
 T₁ = longitudinal or spin-lattice
 relaxation time = RD = Recycle Delay