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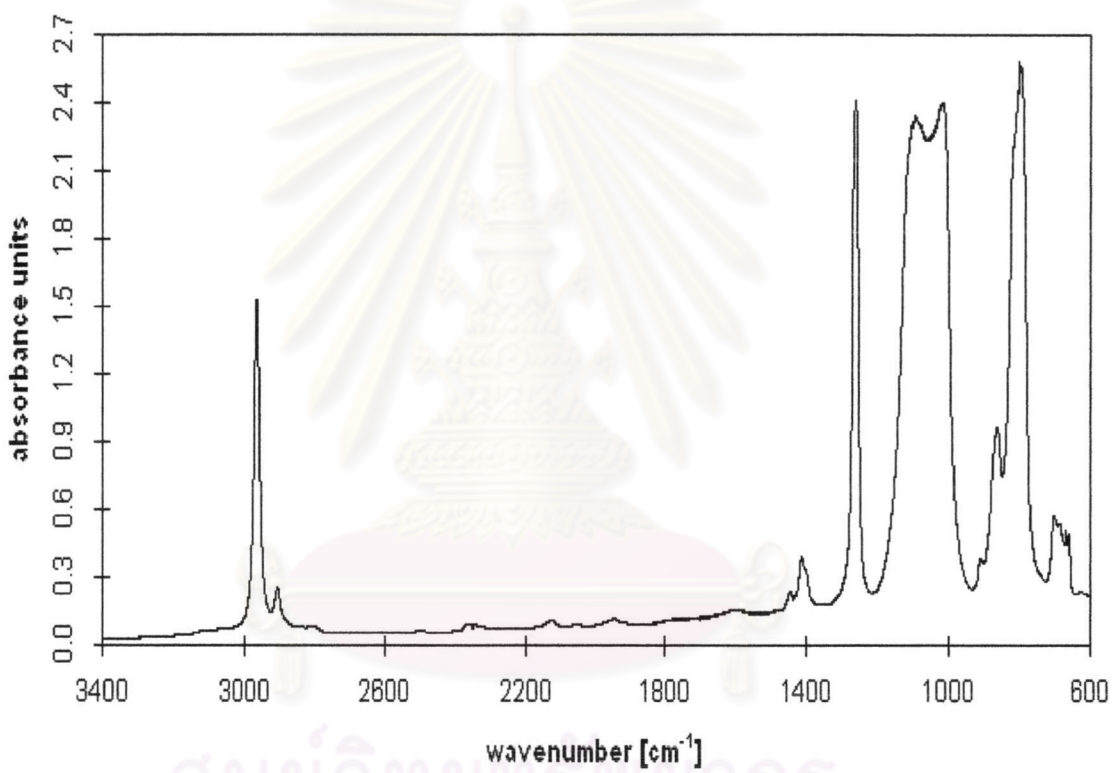
APPENDICES

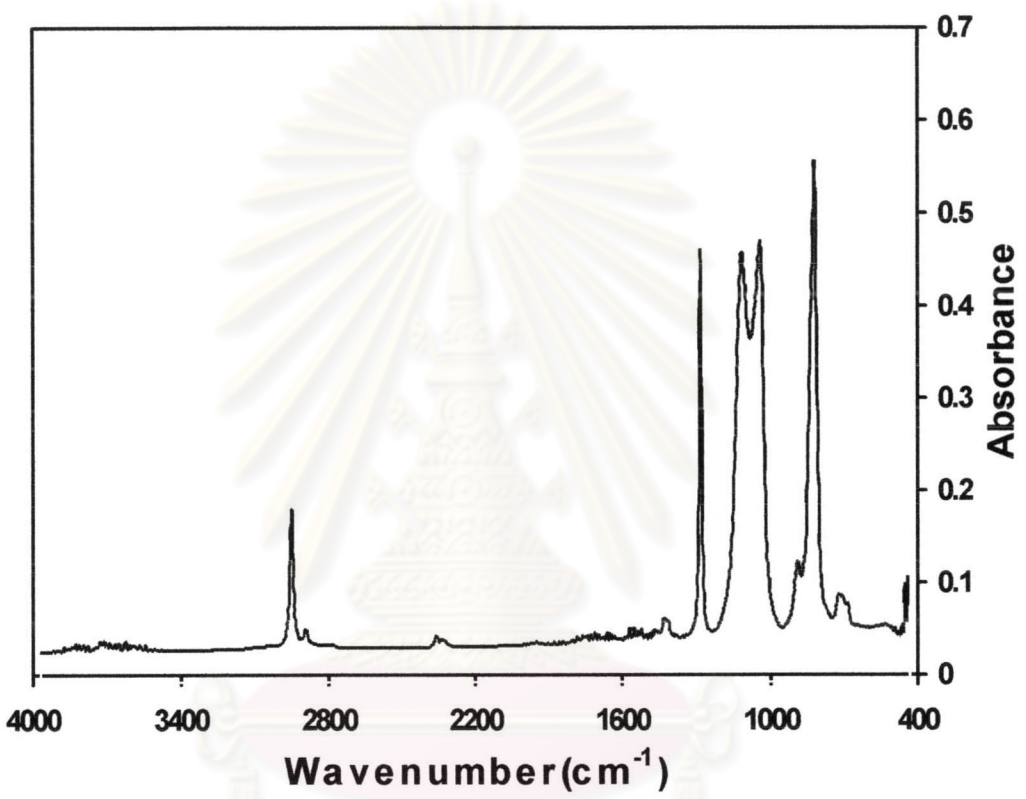
APPENDIX A

FT-IR Spectrum of Silicone Resin in this Investigation

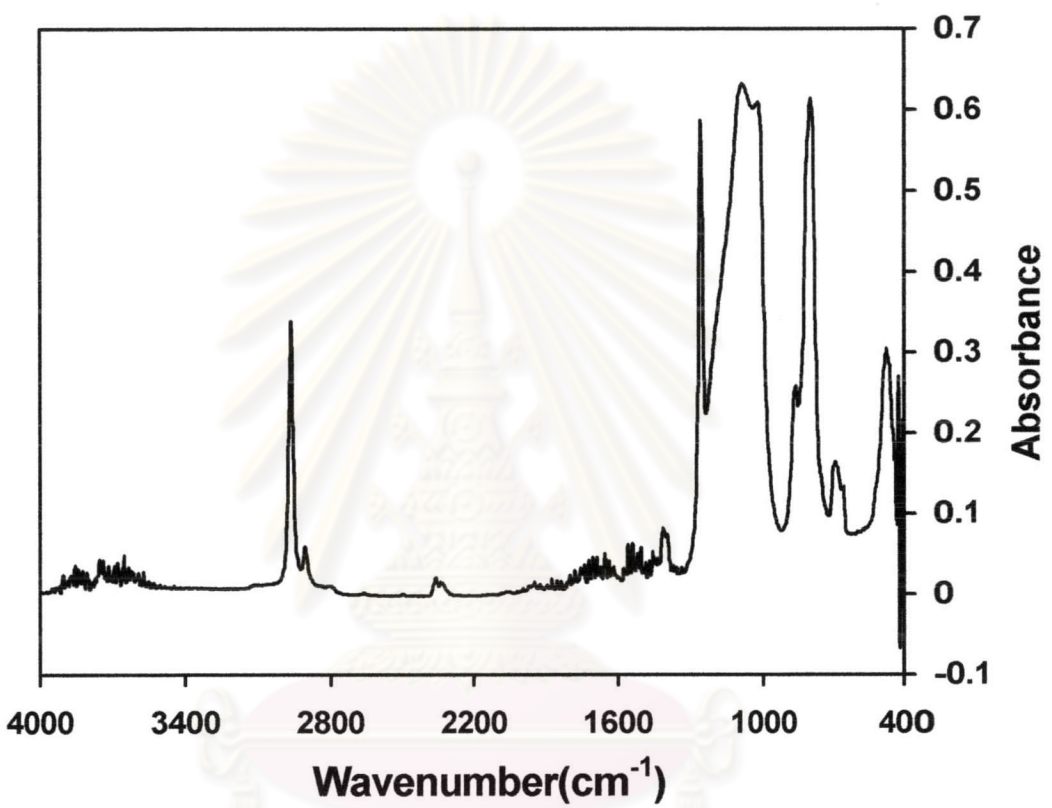
Appendix A-1: Standard spectrum of polydimethylsiloxane



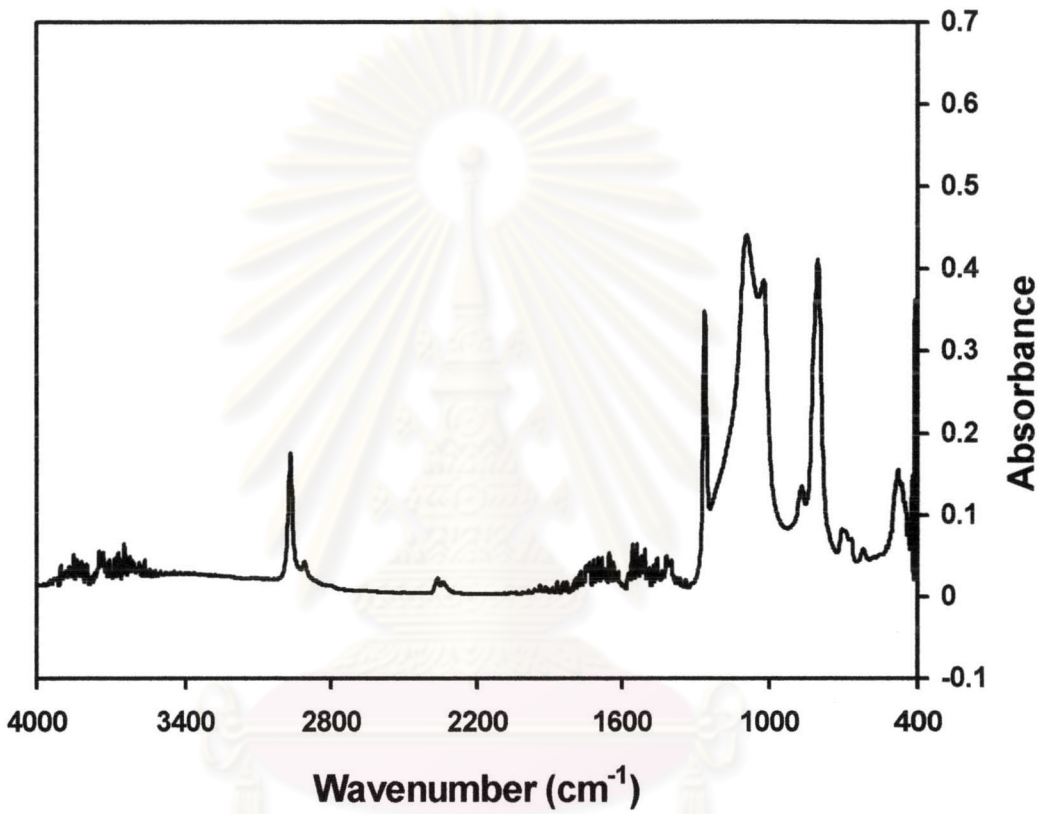
Appendix A-2: IR spectrum of silicone oil (a modifier agent)



Appendix A-3: IR spectrum of silicone resin RTV 3480



Appendix A-4: IR spectrum of silicone resin RTV 4503



APPENDIX B

Raw Data on Mechanical Results of Mechanical Property Testing of Silicone Elastomer

Appendix B-1 Tensile modulus of silicone resin RTV 585 as a function of curing agent

Curing agent concentration (phr)	Period			
	1 week	2 weeks	3 weeks	4 weeks
1.0	0.26	0.86	0.94	0.96
1.5	0.43	1.32	1.21	1.43
2.0	0.64	1.39	1.32	1.33
2.5	0.6	1.64	1.58	1.65

Appendix B-2 Tensile strength of each silicone resin

Curing agent concentration (phr)	Tensile strength (MPa)			
	RTV 585	RTV 300	RTV 3480	RTV 4503
1.0	1.35	2.75	1.37	-
1.5	3.32	2.72	1.8	2.59
2.0	2.63	2.27	1.96	2.69
2.5	2.78	2.58	1.84	2.26

Appendix B-3 Percentage of elongation of each silicone resin

Curing agent concentration (phr)	% Elongation			
	RTV 585	RTV 300	RTV 3480	RTV 4503
1.0	713.71	950.63	602.99	-
1.5	897.21	775.28	479.66	550.12
2.0	695.16	688.26	455.37	1069.44
2.5	635.89	627.63	391.85	884.96

Appendix B-4 Tensile modulus of each silicone resin

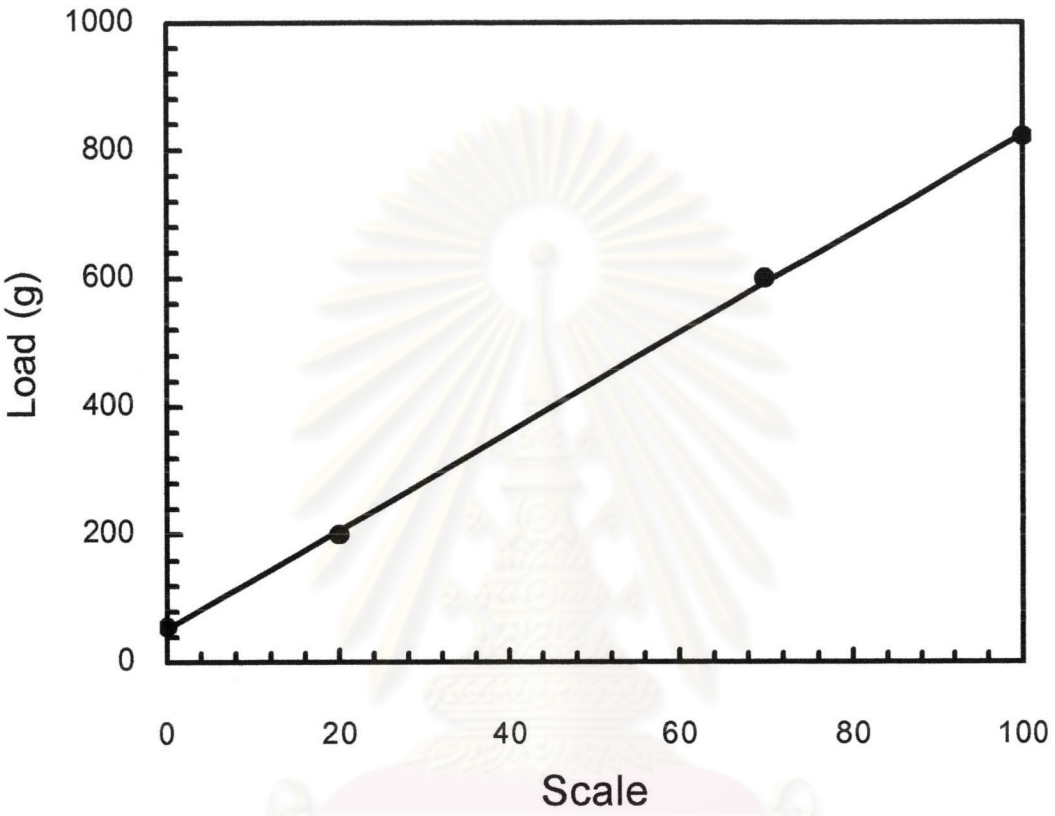
Curing agent concentration (phr)	Tensile modulus (MPa)			
	RTV 585	RTV 300	RTV 3480	RTV 4503
1.0	0.19	0.29	0.23	-
1.5	0.38	0.35	0.38	0.33
2.0	0.41	0.34	0.43	0.49
2.5	0.45	0.43	0.47	0.56

(-) = can not cure to silicone elastomer

Appendix B-5 Hardness testing of each silicone resin at three weeks

Silicone resin	Curing agent conc.(phr)	Hardness (shore A)					
		1	2	3	4	5	average
RTV 585	1.0	4	3	3	4	4	**3.6**
	1.5	12	15	14	15	14	**14.0**
	2.0	18	18	18	16	17	**17.4**
	2.5	17	20	22	19	18	**19.2**
RTV 300	1.0	10	12	13	12	9	**11.2**
	1.5	19	22	22	22	21	**21.2**
	2.0	22	24	22	22	25	**23.0**
	2.5	24	25	24	27	25	**25.0**
RTV 4503	1.0	**uncure**					
	1.5	12	14	11	12	12	**12.2**
	2.0	19	20	20	20	17	**19.2**
	2.5	20	21	18	19	20	**19.6**
RTV 3480	1.0	3	3	3	4	3	**3.2**
	1.5	9	10	10	9	9	**9.4**
	2.0	13	15	15	14	17	**14.8**
	2.5	16	18	18	17	20	**17.8**

Appendix B-6 Force displacement curve for hardness testing (ASTM D2240)



Appendix B-7 Effect of silicone resin types on crosslink density at curing agent concentration of 1.5 phr as a function of time

Silicone resin	Crosslink density x 10^{-4} (mole/cm^3)			
	1 week	2 weeks	3 weeks	4 weeks
RTV 585	0.27	0.69	0.93	0.93
RTV 300	0.58	1.77	1.63	1.92
RTV 4503	1.32	1.41	1.61	1.35

Appendix B-8 Effect of silicone resin types on molecular weight between crosslink at curing agent concentration of 1.5 phr as a function of time

Silicone resin	M_c x 10^4 (g/mole)			
	1 week	2 weeks	3 weeks	4 weeks
RTV 585	2.11	0.69	0.75	0.63
RTV 300	0.83	0.78	0.68	0.81
RTV 4503	4.28	1.67	1.25	1.26

Appendix B-9 Crosslink density of RTV 585 as a function of curing agent concentrations

Curing agent concentration (phr)	Crosslink density x 10^{-4} (mole/cm^3)			
	1 week	2 weeks	3 weeks	4 weeks
1.0	0.28	0.44	0.51	0.54
1.5	0.66	0.78	0.82	0.83
2.0	0.81	0.85	0.90	0.86
2.5	0.83	0.94	0.96	0.98

Appendix B-10 Molecular weight between crosslink of silicone resin RTV 585 as a function of curing agent concentration

Curing agent concentration (phr)	M_c x 10^4 (g/mole)			
	1 week	2 weeks	3 weeks	4 weeks
1.0	3.94	2.93	2.39	2.11
1.5	1.86	1.56	1.49	1.46
2.0	1.50	1.44	1.49	1.39
2.5	1.48	1.30	1.27	1.25

VITAE

Miss Kanittha Kamonchaivanich was born in Bangkok, Thailand on September 21, 1979. She graduated at secondary school level in 1994 and high school level in 1996 from St. John's College. In 2000, she received a Bachelor Degree of Chemical Technology with a major in Chemical Engineering from the Faculty of Science, Chulalongkorn University. After graduation, she pursed her graduate study for a Master Degree of Chemical Engineering, Faculty of Engineering, Chulalongkorn University.