

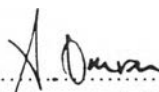
**EFFECT OF BLOCK COPOLYMER AS A COMPATIBILIZER
FOR IMMISCIBLE BLEND**

Mr. Rattakrai Sirisook


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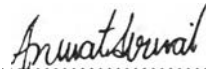
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ABSTRACT

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COMPATIBILIZER

RATTHAKRAI SIRISOOK : EFFECT OF BLOCK COPOLYMER AS
A COMPATIBILIZER FOR IMMISCIBLE BLEND : THESIS

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Polymer blends combine attractive properties of component polymers. However, immiscible blends always show poor mechanical properties because of poor interfacial adhesion. For the improvement of adhesion at the interface of immiscible blends, block copolymer is used as a compatibilizer. In this study, poly(styrene)/poly(styrene-*b*-isoprene)/poly(isoprene) [PS/P(S-*b*-I)/PI] blends are our materials and P(S-*b*-I) diblock copolymer is used as a polymeric surfactant. Dynamical measurements of the storage and the loss moduli of these immiscible blends show interesting behaviors only for some composition ratios in which PI is dispersed as the minor phase in the PS/P(S-*b*-I)/PI blend. The effect of P(S-*b*-I) diblock copolymer as a compatibilizer is also found in the measurement of the strain rate.

บทคัดย่อ

รัฐไกร ศิริสุข : ผลของบล็อกโคพอลิเมอร์เมื่อทำหน้าที่เป็นตัวช่วยให้พอลิเมอร์ผสม
เข้ากันเป็นเนื้อเดียวกันได้ (Effect of Block Copolymer as a Compatibilizer for
Immiscible Blend)

อ.ที่ปรึกษา : ศ.ดร. อเล็กซานเดอร์ เอ็ม. เจมิสัน, รศ.ดร. อนุวัฒน์ ศิริวัฒน์,

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พอลิเมอร์ผสมสามารถแสดงสมบัติที่น่าสนใจของพอลิเมอร์ต่างๆที่เป็นองค์ประกอบในพอลิเมอร์ผสมนั้น แต่ถ้าพอลิเมอร์ผสมนั้นไม่สามารถเข้ากันเป็นเนื้อเดียวกันได้ ก็จะได้สมบัติทางกลที่ไม่ค่อยดีเนื่องจากมีแรงยึดเกาะระหว่างเฟสต่ำ ในการปรับปรุงให้แรงยึดเกาะของพอลิเมอร์ผสมให้ดีขึ้น สามารถทำได้โดยการใช้บล็อกโคพอลิเมอร์เป็นตัวช่วยให้พอลิเมอร์ผสมเข้ากันเป็นเนื้อเดียวกันได้ การศึกษาครั้งนี้เป็นการศึกษาพอลิเมอร์ผสมของ พอลิไอโซพรีน / พอลิ(ไอโซพรีน-สไตรีน)โคบล็อกโคพอลิเมอร์ / พอลิสไตรีน โดยมีพอลิ(ไอโซพรีน-สไตรีน)โคบล็อกโคพอลิเมอร์ทำหน้าที่เป็นตัวช่วยให้พอลิเมอร์ผสมเข้ากันได้ ในการวัดค่าสโตราจโมดูลัสและลอสโมดูลัสของพอลิเมอร์ผสมเหล่านี้ ได้พบปรากฏการณ์บางอย่างที่น่าสนใจในบางอัตราส่วนของพอลิเมอร์ผสมที่มีพอลิไอโซพรีนกระจายอยู่เป็นส่วนน้อยของผสม อิทธิพลของพอลิ(ไอโซพรีน-สไตรีน)โคบล็อกโคพอลิเมอร์ที่มีต่อพอลิเมอร์ผสมนั้นได้แสดงในค่าของอัตราการยืดตัวของพอลิเมอร์ผสมเช่นกัน

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TABLE OF CONTENTS

CHAPTER	PAGE
Title Page.....	i
Abstract.....	iii
Acknowledgments.....	v
Table of Contents.....	vi
List of Figures.....	ix
I INTRODUCTION	
1.1 Polymer Blends.....	1
1.1.1 Miscible Blends.....	2
1.1.2 Immiscible Blends.....	3
1.2 Block Copolymer.....	5
1.3 Block Copolymer as a Compatibilizer for Immiscible Blend.....	6
1.4 Literature Survey.....	7
1.5 Objectives.....	9
II EXPERIMENTAL SECTION	
2.1 Materials.....	10
2.1.1 Polymers.....	10
2.1.2 Solvent.....	10

CHAPTER	PAGE
2.2	Sample Preparations.....11
2.2.1	Polymer Solution.....11
2.2.2	Polymer Films.....11
2.3	Sample Characterizations.....12
2.3.1	Molecular Weight Determination.....12
2.3.2	Glass Transition Temperature Determination..13
2.4	Dynamic Mechanical Analyzer.....14
2.4.1	Principle of Dynamic Mechanical Analyzer...15
2.4.2	Measuring Systems.....18
	(a) <i>Extension</i>18
	(b) <i>Parallel Plate</i>19
2.4.3	Operating Modes.....19
	(a) <i>Temperature Scan Mode</i>19
	(b) <i>Creep-Recovery Mode</i>20
2.4.4	Measurements.....20
	(a) <i>Dynamic Mechanical Measurement</i>20
	(b) <i>Mechanical Measurement</i>21
III	RESULTS AND DISCUSSION
3.1	Dynamic Mechanical Properties.....22
3.1.1	Loss Modulus.....22
3.1.2	Storage Modulus.....27
3.2	Mechanical Properties.....32
3.2.1	Young's Modulus.....33
3.2.2	Strain Rate or Rate of Deformation.....34

CHAPTER	PAGE
IV CONCLUSIONS.....	62
APPENDICES.....	64
REFERENCES.....	76

LIST OF FIGURES

FIGURE		PAGE
1.1	Property vs composition profiles of immiscible and miscible blends.....	4
1.2	The model of a block copolymer domain.....	5
1.3	(a) Ideal configuration of a block copolymer at the interface between polymer phases A and B. (b) Formation of an interphase between phases A and B promoted by a compatibilizer.....	6
2.1	DMA 7-e Dynamic Mechanical Analyzer.....	14
2.2	DMA 7-e system.....	15
2.3	DMA 7-e Motor Control Variables.....	17
2.4	Simplified definition of K' and K''	17
2.5	Extensional Analysis Measuring Systems: Stainless Steel Parallel Clamp.....	18
2.6	Parallel Plate Measuring System: Stainless Steel.....	19
3.1	Effect of composition ratio on the loss modulus of PS/PI blends.....	36
3.2	Effect of % block copolymer on the loss modulus of PS/PI (75/25) blends.....	37
3.3	Effect of % block copolymer on the transition temperature (loss modulus peak) of PS/PI (75/25) blends.....	38

FIGURE	PAGE
3.4	Effect of % block copolymer on the loss modulus peak of PS/PI (75/25) blends.....39
3.5	Effect of % block copolymer on the loss modulus of PS/PI (83/17) blends.....40
3.6	The transition temperature of PS-loss modulus peak as a function of % PI with and without the diblock copolymer.....41
3.7	The transition temperature of PI-loss modulus peak as a function of % PI with and without the diblock copolymer.....42
3.8	The PS-loss modulus peak as a function of % PI with and without the diblock copolymer.....43
3.9	The PI-loss modulus peak as a function of % PI with and without the diblock copolymer.....44
3.10	Effect of composition ratio on the storage modulus of PS/PI blends.....45
3.11	Effect of % block copolymer on the storage modulus of PS/PI (75/25) blends.....46
3.12	Effect of % block copolymer on the transition temperature (storage modulus inflection) of PS/PI (75/25) blends.....47
3.13	Effect of % block copolymer on the PS-storage modulus peak of PS/PI (75/25) blends.....48
3.14	Effect of % block copolymer on the PI-storage modulus plateau of PS/PI (75/25) blends.....49

FIGURE	PAGE
3.15	Effect of % block copolymer on the storage modulus of PS/PI (83/17) blends.....50
3.16	The transition temperature of PS-storage modulus inflection as a function of % PI with and without the diblock copolymer.....51
3.17	The transition temperature of PI-storage modulus inflection as a function of % PI with and without the diblock copolymer.....52
3.18	The PS-storage modulus peak as a function of % PI with and without the diblock copolymer.....53
3.19	The PI-storage modulus peak as a function of % PI with and without the diblock copolymer.....54
3.20	Effect of composition ratio on Young's modulus.....55
3.21	Effect of composition ratio on strain rate (stress rate = 10mN/min).....56
3.22	Effect of composition ratio on strain rate (stress rate = 100mN/min).....57
3.23	Effect of composition ratio on strain rate (stress rate = 200mN/min).....58
3.24	Effect of composition ratio on strain rate (stress rate = 300mN/min).....59
3.25	Effect of composition ratio on strain rate (stress rate = 400mN/min).....60
3.26	Effect of composition ratio on strain rate (stress rate = 500mN/min).....61