

**TIME-TEMPERATURE SUPERPOSITION OF VISCOELASTIC
FUNCTIONS OF PMMA/SAN BLEND AT TEMPERATURES ABOVE
AND BELOW T_g**

Ms. Supranee Kaewpirom

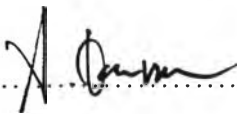
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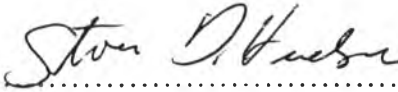
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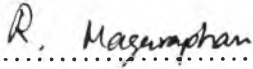
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ABSTRACT

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KEYWORD : TIME-TEMPERATURE SUPERPOSITION/ VISCOELASTIC
FUNCTIONS/ WLF EQUATION/ COUPLING MODEL

SUPRANEE KAEWPIROM : TIME-TEMPERATURE SUPERPOSITION
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Viscoelastic functions of miscible PMMA/SAN blends were studied at temperatures above and below T_g . Master curves of G' and $\tan \delta$ can be obtained successfully. The shift factors a_T at temperatures below T_g , $(a_T)_\alpha$, show a stronger temperature dependence than those at temperatures above T_g , $(a_T)_\eta$. The WLF empirical equation can be used to predict the temperature dependence of the shift factor above T_g . To account for the stronger temperature dependence, the coupling model of relaxation was applied to our data. A good agreement between the model and the experimental data was obtained.

บทคัดย่อ

สุปราณี แก้วภิรมย์ : การเทียบเท่าของเวลาและอุณหภูมิ ของสมบัติทางวิสโคอีลาสติก ของของผสม PMMA และ SAN ที่อุณหภูมิสูงกว่าและต่ำกว่าอุณหภูมิเปลี่ยนสถานะคล้ายแก้ว (Time-Temperature Superposition of Viscoelastic Function of PMMA/SAN Blends at Temperatures above and below T_g) อ. ที่ปรึกษา : Assoc. Prof. Steven D. Hudson และ รศ. ดร. อนุวัฒน์ ศิริวัฒน์ 70 หน้า, ISBN 974-636-123-6

การศึกษาสมบัติทางวิสโคอีลาสติก (Viscoelastic function) ของของผสมเนื้อเดียว PMMA และ SAN ที่อุณหภูมิสูงกว่าและต่ำกว่าอุณหภูมิเปลี่ยนสถานะคล้ายแก้ว (T_g) พบว่าสามารถเตรียมกราฟมาตรฐาน (master curve) ของ G' และ $\tan\delta$ ได้ และปัจจัยในการเลื่อน (shift factor) หรือ (a_T) ที่อุณหภูมิต่ำกว่าอุณหภูมิเปลี่ยนสถานะคล้ายแก้ว $[(a_T)_\alpha]$ แปรตามอุณหภูมิมากกว่าปัจจัยการเลื่อนที่อุณหภูมิสูงกว่าอุณหภูมิเปลี่ยนสถานะคล้ายแก้ว $[(a_T)_\eta]$ สมการ WLF สามารถใช้ทำนายค่า $(a_T)_\eta$ ได้สอดคล้องกับค่าที่ได้จากการทดลอง แต่ค่า $(a_T)_\alpha$ ที่ทำนายโดยสมการ WLF ไม่สอดคล้องกับค่าที่ได้จากการทดลองเนื่องจาก $(a_T)_\eta$ และ $(a_T)_\alpha$ แปรตามอุณหภูมิได้ต่างกัน ดังนั้นจึงใช้ coupling model ในการทำนาย $(a_T)_\alpha$ และพบว่าค่าที่ได้จากการทำนายโดยใช้ coupling model สอดคล้องกับค่าที่ได้จากการทดลอง

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