

ผลของภาวะพอลิเมอไรเซชันต่อไอโซเทคติกซิตีของพอลิโพรพิลีนโดยตัวเร่งปฏิกิริยา

ซีเกลอร์-แนตตาและตัวเร่งปฏิกิริยาเมทัลโลซีน



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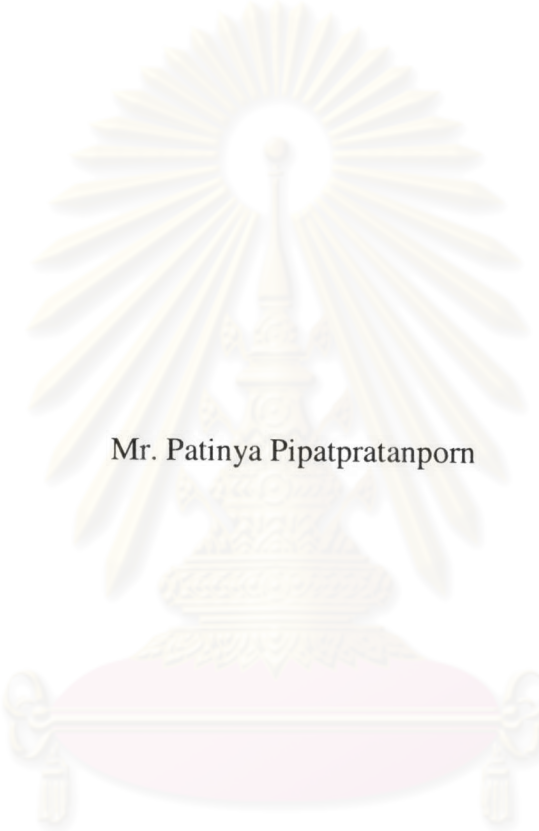
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EFFECTS OF POLYMERIZATION CONDITIONS ON ISOTACTICITY OF
POLYPROPYLENE USING ZIEGLER-NATTA AND METALLOCENE
CATALYSTS



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ปริญญา พัฒนาประทานพร: ผลของภาวะพอลิเมอไรเซชันต่อไอโซแทคติกซิตีของพอลิโพรพิลีนโดยตัวเร่งปฏิกิริยาซีเกลอร์-แนตตาและตัวเร่งปฏิกิริยาเมทัลโลซีน (EFFECTS OF POLYMERIZATION CONDITIONS ON ISOTACTICITY OF POLYPROPYLENE USING ZIEGLER-NATTA AND METALLOCENE CATALYSTS)

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พอลิโพรพิลีนได้ถูกสังเคราะห์โดยตัวเร่งปฏิกิริยาซีเกลอร์-แนตตาบนตัวรองรับ ($MgCl_2/TiCl_4/DEP$) และตัวเร่งปฏิกิริยาเมทัลโลซีนที่มีสมมาตรแบบ C_2 บนตัวรองรับ ($SiO_2/MAO/TMA/rac-Et(Ind)_2ZrCl_2$) ค่าไอโซแทคติกซิตีของไอโซแทคติกพอลิเมอไรเซชันที่สังเคราะห์ได้ภายใต้ภาวะพอลิเมอไรเซชันต่างๆกันได้ถูกตรวจวัดด้วยเทคนิค ^{13}C NMR ผลของภาวะพอลิเมอไรเซชันต่างๆ ได้แก่ ชนิดของตัวทำละลาย อุณหภูมิพอลิเมอไรเซชัน ความดันโพรพิลีน และ ความเข้มข้นของตัวเร่งปฏิกิริยา ต่อค่าไอโซแทคติกซิตีของไอโซแทคติกพอลิโพรพิลีนได้ถูกตรวจสอบ ในการศึกษาผลของตัวทำละลาย เฮกเซน เฮปเทน โทลูอีน และ ไซลีน ได้ถูกใช้เป็นตัวทำละลาย ค่าไอโซแทคติกซิตีของไอโซแทคติกพอลิโพรพิลีนเมื่อใช้ ตัวทำละลายที่มีโครงสร้างเป็นอะโรมาติกส์ คือโทลูอีน และ ไซลีน มีค่าต่ำกว่าในกรณีที่ใช้ตัวทำละลายที่มีโครงสร้างเป็นไซโตรง คือ เฮกเซน และ เฮปเทน ซึ่งสามารถอธิบายได้จากความสามารถในการละลายของไดเอทิลพทาเลท ซึ่งทำหน้าที่เป็นสารให้อิเล็กตรอนภายใน (internal donor) ซึ่งช่วยปรับปรุงค่าไอโซแทคติกของพอลิเมอไรเซชันจากตัวเร่งปฏิกิริยาไปสู่ตัวทำละลาย สารให้อิเล็กตรอนภายในซึ่งมีโครงสร้างแบบวงแหวนสามารถละลายในตัวทำละลายที่มีโครงสร้างเป็นวงแหวนได้ดีกว่าในตัวทำละลายที่มีโครงสร้างแบบไซโตรง ส่งผลให้ค่าไอโซแทคติกซิตีของพอลิเมอไรเซชันที่ได้มีค่าต่ำกว่า

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