

**HIGHLY POROUS POLYMERIC FOAM OF POLY(DVB) FILLED WITH
MALEIMIDE-TERMINATED POLY(ARYLENE ETHER SULFONE)
OLIGOMERS VIA HIGH INTERNAL PHASE EMULSION**



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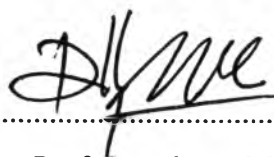
Thesis Title: Highly Porous Polymeric Foam of Poly(DVB) Filled with Maleimide-Terminated Poly(arylene ether sulfone) Oligomers via High Internal Phase Emulsion

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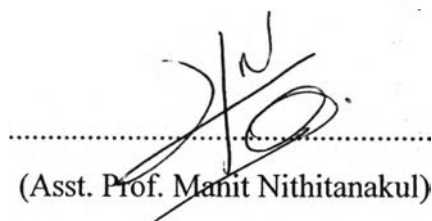
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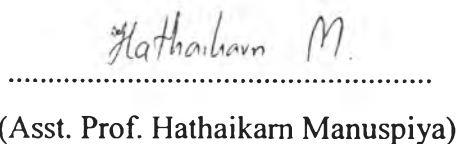


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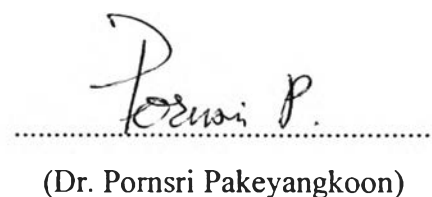
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ABSTRACT

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Monreudee Dejsukdipol: Highly Porous Polymeric Foam of Poly(DVB) Filled with Maleimide-Terminated Poly(arylene ether sulfone) Oligomers via High Internal Phase Emulsion.

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Keywords: Poly(DVB)HIPEs/ Mixed surfactants/ Polysulfone/ CO₂ gas adsorption

Maleimide-terminated poly(arylene ether sulfone) oligomers were synthesized by the nucleophilic step-growth polymerization of bisphenol A phenolates with activated halides at about 150 °C and a required amount of Bis-(4-chlorophenyl)-sulfone. This method was accomplished by reacting the terminate amine with maleic anhydride. The obtained maleimide-terminated poly(arylene ether sulfone) oligomers were characterized by IR, NMR, and DSC. PolyHIPEs, using divinylbenzene filled with maleimide-terminated poly(arylene ether sulfone) oligomers (0, 2.5, 5, and 10 %) were prepared using SPAN80:DDBSS:CTAB (6.3:0.4:0.3) as the surfactant. The obtained polyHIPEs were characterized for their phase morphology, surface area, thermal properties, and mechanical properties using SEM, BET, TG/DTA, and a Universal Tensile Testing machine, respectively. The prepared polyHIPEs will be used for adsorbing the CO₂ produced during the gasification process to increase the heating value of syn gas.

บทคัดย่อ

มลฤฎี เคชศักดิพล : พอลิเมอร์ที่มีโครงสร้างรูพรุนสูงของพอลิ(ไดไวนิลเบนซิล)เติมด้วยพอลิ(อัลลิลีนอีเทอร์ซัลโฟน)ปลายมาเลอิมิด (Highly Porous Polymeric Foam of Poly(DVB) Filled with Maleimide-Terminated Poly(arylene ether sulfone) Oligomers via High Internal Phase Emulsion) อ. ที่ปรึกษา : ผู้ช่วยศาสตราจารย์ ดร.มานิตย์ นิธิธนากุล 63 หน้า

พอลิ(อัลลิลีนอีเทอร์ซัลโฟน)ปลายมาเลอิมิดสังเคราะห์โดยปฏิกิริยานิวเคลียโอฟิลิก เสดปโกรส พอลิเมอร์ไรเซชันของบิสฟีนอลเอ ฟีนอลเอสกับ กลุ่มไฮไลด์ที่อุณหภูมิ 150 องศาเซลเซียส โดยกำหนดปริมาณของบิส-4-คลอโรฟีนิลซัลโฟน วิธีนี้จะสำเร็จเมื่อได้เอมีนที่หมู่ปลายและทำปฏิกิริยากับมาเลอิกแอนไฮไดรต์ พอลิ(อัลลิลีนอีเทอร์ซัลโฟน)ปลายมาเลอิมิดที่ได้มานั้นจะถูกทดสอบด้วยวิธี อินฟราเรด สเปกโตรสโคปี, นิวเคลียร์แมกเนติกเรโซแนนซ์ สเปกโตรสโคปี และดิฟเฟอร์เรนเชียลสแกนนิ่งคาลอริเมตรี พอลิเมอร์ที่มีโครงสร้างรูพรุนสูงของพอลิ(ไดไวนิล เบนซิล)เติมด้วย พอลิ(อัลลิลีนอีเทอร์ซัลโฟน)ปลายมาเลอิมิด (0, 2.5, 5, และ 10 เปอร์เซ็นต์โดยน้ำหนัก) ถูกเตรียมขึ้นโดยใช้สารลดแรงตึงผิวสูตรผสมประกอบด้วยสแปน 80, คีดีบีเอสเอส และซีแทบ ในอัตราส่วน 6.3, 0.4 และ 0.3 เปอร์เซ็นต์โดยน้ำหนัก พอลิเมอร์ที่มีโครงสร้างรูพรุนสูงที่ได้มานั้นถูกทดสอบเพื่อศึกษาโครงสร้าง, พื้นที่ผิว, อุณหภูมิ และความแข็งแรงโดยใช้สแกนนิ่งอิเล็กตรอนไมโครสโคปี, เครื่องวัดพื้นที่ผิวลูเนอร์ เอ็มเมท เทลเลอร์, เทอร์มอลกราวิเมตริก, เครื่องทดสอบความแข็งแรงตามลำดับ พอลิเมอร์ที่มีโครงสร้างรูพรุนสูงที่เตรียมขึ้นมานี้จะใช้สำหรับดูดซับก๊าซคาร์บอนไดออกไซด์ที่ผลิตจากกระบวนการเผาขยะเพื่อเพิ่มปริมาณค่าความร้อนของก๊าซที่ได้จากการเผาขยะของซิลิกา

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