

**THIN FILM COATING OF POLYSTYRENE THROUGH
VAPOR PHASE MONOMER DEPOSITION**

Mr. Wera Kiettikul

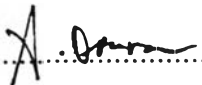
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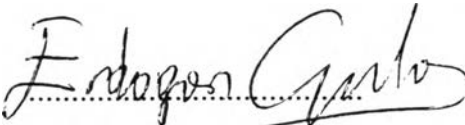
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ABSTRACT

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Thin-film of polystyrene on quartz substrate was obtained in an atmospheric pressure vapor deposition chamber. The polymerization was initiated by ultraviolet lamp in the presence of photoinitiator. The polymerization takes place at low substrate temperature with the use of 100W ultraviolet lamp. Deposition weight and molecular weight are found to increase with the decrement of substrate temperature down to -5.0 °C. The increments of diphenyl (2,4,6-trimethylbenzoyl) phosphine oxide photoinitiator, deposition time, and flow rate of nitrogen carrier gas increase the deposition weight and molecular weight of deposited film.

บทคัดย่อ

วีระ เกียรติกุล: การเคลือบฟิล์มบางของพอลิสไตรีนโดยการเกาะติดของมอนอเมอร์ในสถานะไอ (Thin film Coating of Polystyrene through Vapor Phase Monomer Deposition) อาจารย์ที่ปรึกษา: ศ.ดร.เอโดแกน กุลาริ และ ดร.นันทยา ขานูเมศ 72 หน้า ISBN 974-638-522-4

การเคลือบติดของฟิล์มบางพอลิสไตรีนสามารถกระทำได้บนพื้นผิวควอตซ์โดยกระบวนการเกาะติดของไอในความดันบรรยากาศ การเกิดปฏิกิริยาพอลิเมอไรเซชันสามารถกระตุ้นได้ด้วยการใช้ตัวเร่งปฏิกิริยาแบบใช้แสงและหลอดกำเนิดแสงเหนือม่วง พื้นผิวที่อุณหภูมิต่ำสามารถเกิดปฏิกิริยาพอลิเมอไรเซชันด้วยหลอดรังสีเหนือม่วงที่มีกำลัง 100 วัตต์ เมื่อลดอุณหภูมิของพื้นผิวลงเท่ากับ -5.0 องศาเซลเซียส พบว่าน้ำหนักของฟิล์มที่เกาะติดและมวลโมเลกุลมีค่าเพิ่มขึ้น การเพิ่มปริมาณของตัวเร่งปฏิกิริยา (2,4,6 - ไตรเมทิลเบนโซอิล ฟอสฟิน ออกไซด์), เวลาในการเกาะติด, และอัตราการไหลของแก๊สพาหะไนโตรเจน จะเพิ่มน้ำหนักของฟิล์มที่เกาะติดและมวลโมเลกุลของฟิล์ม

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