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**EFFECT OF ISOAMYL ALCOHOL ON EMISSION OF TOXIC  
SUBSTANCES FROM DIESEL ENGINE**



**Miss Supavadee Tuntipisit**

**A Thesis Submitted in Partial Fulfillment of the Requirements**

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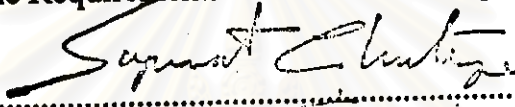
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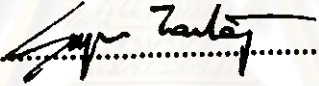
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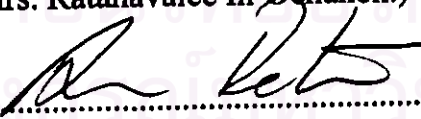
  
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พิมพ์ต้นฉบับบทความวิจัยวิทยานิพนธ์ภายในกรอบสี่เหลี่ยมนี้เพียงแผ่นเดียว

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งานวิจัยนี้เป็นการศึกษาอิทธิพลของสารประกอบออกซิเจนที่มีต่อสารพอลิไซคลิกอะโรมาติกไฮโดรคาร์บอนในไอเสียโดยใช้เครื่องยนต์ดีเซลรุ่น 4FG1 และในการทดลองได้เก็บตัวอย่างไอเสียโดยกำหนดให้ไม่มีแรงบิดในเครื่องยนต์และมีความเร็ว 800 1600 และ 2400 รอบต่อนาที โดยใช้น้ำมันดีเซลพื้นฐานผสมกับไอโซเอมิลแอลกอฮอล์ในปริมาณ 4 6 8 และ 10 เปอร์เซ็นต์โดยปริมาตร และวิเคราะห์หาปริมาณของสารพอลิไซคลิกอะโรมาติกไฮโดรคาร์บอนในไอเสียโดยใช้เทคนิค GC-MS สารพอลิไซคลิกอะโรมาติกไฮโดรคาร์บอนที่พบในไอเสียได้แก่ naphthalene, acenaphthylene, acenaphthalene, fluorene, phenanthrene, anthracene, fluoranthene และ pyrene จากการทดสอบพบว่า ปริมาณของสารพอลิไซคลิกอะโรมาติกไฮโดรคาร์บอนที่ความเร็ว 1600 รอบต่อนาที มีค่าต่ำกว่าที่ความเร็ว 800 และ 2400 รอบต่อนาที และในการศึกษาถึงอิทธิพลของไอโซเอมิลแอลกอฮอล์ที่ผสมในน้ำมันดีเซลพบว่า สารพอลิไซคลิกอะโรมาติกไฮโดรคาร์บอนมีค่าต่ำลงเมื่อเติมแอลกอฮอล์ในปริมาณ 4 ถึง 10 เปอร์เซ็นต์โดยปริมาตร.



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KEY WORD: DIESEL ENGINE/EXHAUST EMISSION/OXYGENATED COMPOUND/  
POLYCYCLIC AROMATIC HYDROCARBON

SUPAVADEE TUNTIPIKIT : EFFECT OF ISOAMYL ALCOHOL ON  
EMISSION OF TOXIC SUBSTANCES FROM DIESEL ENGINE. THESIS

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The effect of oxygenated compounds on the emission of polycyclic aromatic hydrocarbons (PAHs) by an ISUZU model 4FG1 Diesel engine has been investigated. Exhaust samples were sampled at no load and at engine speeds of 800, 1600 and 2400 rpm setting for each concentration of isoamyl alcohol. Base Diesel fuel was blended with isoamyl alcohol at 4, 6, 8 and 10 % by volume. The PAHs in the exhaust were analyzed by GC-MS. PAHs found in Diesel exhaust were: naphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene, anthracene, fluoranthene and pyrene. It was found that the concentration of PAHs in Diesel exhaust at engine speed 1600 rpm was slightly lower than at engine speed 800 and 2400 rpm. The concentrations of PAHs in Diesel exhaust decreased with the increase of the concentration of isoamyl alcohol from 4 to 10 % by volume.



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## ABBREVIATIONS

PAHs	=	Polycyclic aromatic hydrocarbons
PACs	=	Polycyclic aromatic compounds
SOF	=	Solvent organic fraction
PUF	=	Polyurethane foam
GF	=	Glass fiber filter



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