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**THE EFFECT OF IMPROVED FUEL QUALITY ON DIESEL  
ENGINE EXHAUST EMISSIONS**


**Miss Wanwiwa Numtip**

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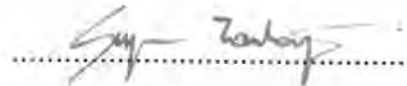
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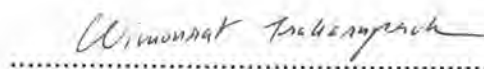
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พิมพ์ต้นฉบับบทคัดย่อวิทยานิพนธ์ภายในกรอบสี่เหลี่ยมนี้เพียงแผ่นเดียว

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น้ำมันพื้นฐานหกชนิด ที่มีค่าอุณหภูมิที่ 90% จุดกลั่นต่างกันและมีค่าซีเทนอยู่ในช่วง 52-58 นำมาแบ่งแยกออกเป็น 15 ชนิด โดยน้ำมันอีก 9 ชนิดได้จากการเติมสารเพิ่มค่าซีเทนในปริมาณต่างๆ กันลงในน้ำมันพื้นฐาน ทำให้ได้น้ำมันผสมซึ่งมีค่าซีเทนสูงสุด 62 จากนั้นทดสอบน้ำมันทั้งหมดโดยใช้เครื่องยนต์อีซูซุ รุ่น 4JA1 และทำการตรวจวัดปริมาณสารมลพิษ คือ ออกไซด์ของไนโตรเจน ไฮโดรคาร์บอน คาร์บอนมอนอกไซด์ เบนซีน โทลูอิน และ ไซลีน ผลการทดสอบพบว่าทั้งตัวแปรจากเครื่องยนต์และคุณสมบัติของน้ำมันมีผลต่อปริมาณสารมลพิษ การเพิ่มแรงบิดของเครื่องยนต์ทำให้ออกไซด์ของไนโตรเจนเพิ่มขึ้น ส่วนสารมลพิษอื่นๆ ลดลง และสารมลพิษทุกชนิดจะลดลงเล็กน้อยเมื่อค่าซีเทนเพิ่มขึ้นโดยการเติมสารเพิ่มค่าซีเทน และไม่มี ความแตกต่างกันระหว่างผลของสารเพิ่มค่าซีเทน 2 ชนิดคือ Ethylhexyl Nitrate และ Di-tert-Butyl Peroxide ต่อสารมลพิษ

ภาควิชา..... สุนสรา ปัสโรดม - โพลีเมอร์.....  
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Six base fuels with differences in T90 and cetane number of 52-58 were split into fifteen batches. To nine of these batches, varying quantities of cetane improvers were added, resulting in cetane numbers up to 62. The base fuels and blends were tested in a ISUZU model 4JA1 diesel engine, and the exhaust emissions (NO<sub>x</sub>, HC, CO, benzene, toluene, xylene) were measured.

The results showed that the emissions are dependent on engine parameters and fuel properties. NO<sub>x</sub> progressively increased with increasing load while HC, CO and BTX decreased. All emissions were little reduced as cetane number increased with additional cetane improver. The effect of EHN and DTBP on emissions were not different.

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**ABBREVIATIONS**

CN	=	Cetane number
T90	=	Temperature of 90% distillation point
NO <sub>x</sub>	=	Oxides of nitrogen
HC	=	Total hydrocarbon
CO	=	Carbon monoxide
EHN	=	2-Ethylhexyl Nitrate
DTBP	=	Di-tert-Butyl Peroxide
GC	=	Gas chromatograph
°C	=	Degree celcius
rpm	=	Revolutions per minute
A/F ratio	=	Air-Fuel ratio
Ø	=	Equivalence ratio
%v/v	=	Percent volume by volume
µg/m <sup>3</sup>	=	microgramme per cubicmeter
µl	=	microlitre
D.E.	=	Desorption efficiency