

**INVESTIGATION OF EXPLOSION SEVERITY FOR  
METHANE/AIR IN A CLOSED VESSEL**

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# **INVESTIGATION OF EXPLOSION SEVERITY FOR METHANE/AIR IN A CLOSED VESSEL**

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**A thesis submitted in fulfilment of the requirements  
for the award of the Degree of Bachelor Hons.**

**BACHELOR OF CHEMICAL ENGINEERING  
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**JANUARY 2017**

“I hereby declare that I has read this thesis and in my opinion this thesis is sufficient in terms of scope and quality for the award of the Degree of Bachelor Hons. (Chemical Engineering).”

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Date : .....

I declare that this thesis entitled "*Investigation of explosion severity for methane/air in a closed vessel*" is the result of my own research except as cited in the references. The thesis has not been accepted for any degree and is not concurrently submitted in candidature of any other degree.

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I dedicated this thesis to my supervisor, Ir Dr Siti Zubaidah Binti Sulaiman, my supportive parents, helpful teammates, and friends. I couldn't go to this far without you. Thank you for all your support during my Degree journey.

## ACKNOWLEDGEMENT

In the name of Allah, The Most Gracious, The Most Merciful. Praise is to Allah S.W.T. by whose grace and blessings I receive guidance in completing this study. Thanks for His greatest love and blessing. May Allah S.W.T. also bless The Prophet Nabi Muhammad S.A.W. and grant him and his family peace.

Firstly, I would like to extend my deepest gratitude and appreciation to my supervisor, Ir Dr Siti Zubaidah Binti Sulaiman for giving continuous advices, support and motivation and encouragement that helps me up to finish up this research succesfully. Her wide knowledge in this research on theoretical and analytical is really useful and helpful to guide me along the journey of understanding the research objectives.

I wish to express my sincere thanks to my parents Ayub bin Idris, Pauziah Binti Haji Abdul Hamid, and my siblings for all those continuous support, motivations, encouragements and understanding throughout my Degree journey.

Last but not least, I am also thankful to my teammates, Mohd Aidil Bin Awaluddin and Jashwiini A/P Krishnamurthy and also friends from Faculty of Chemical Engineering and Natural Resources for their help, support, encouragements throughout doing the research especially the knowledge sharing really helps me to get this far. I also place on record, my sense of gratitude to one and all, who directly or indirectly, have lent their hand in this research.

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## LIST OF ABBREVIATIONS

CH <sub>4</sub>	-	Methane
dP/dt	-	Rate of pressure rise
DDT	-	Deflagration to detonation transition
K <sub>G</sub>	-	Explosive index
Le	-	Lewis number (dimensionless)
LFL	-	Lower flammability limit
Ma	-	Markstein Length
N <sub>2</sub>	-	Nitrogen
P <sub>max</sub>	-	Maximum pressure
S <sub>f</sub>	-	Flame speed
UFL	-	Upper flammability limit
V1	-	Valve 1