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**SOLID PROPELLANT FORMULATION AND TESTING
FOR MESO-SCALE ROCKET**

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ABSTRACT

This research is intended to develop a solid propellant rocket. In order to achieve the improvement in aerospace and military, solid propellant rocket is widely applied because of its easier and cheaper to fabricate as compared to liquids propellant rocket. In aerospace, solid propellant rocket was used to transfer satellite to outer space and it can assist the nation and the telecommunication discipline.

Propellant is the chemical mixture burned to produce thrust in rockets and consists of fuel and oxidizer. A fuel is a substance which burns when combined with oxygen producing gas for propulsion. Oxidizer is an agent that releases oxygen for combination with a fuel. The ratio of oxidizer to fuel is called the mixture ratio. Propellants are classified according to their state which are liquid, solid, or hybrid.

The solid propellant was made of potassium nitrate and ammonium nitrate as the oxidizer and sucrose as the binder and the fuel. The energy releases by solid propellants were test by using bomb calorimeter. From this research, it is expected that the optimum mixture of the propellant is to be exposed. The higher the calorific value created the higher the thrust produced. Preliminary experiment showed that the solid propellant have good characteristic of a rocket propellant. This experiment shows that the propellant which has higher fuel contain has higher calorific value.

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