

SPACE PROPULSION SYMPOSIUM (C4)
Interactive Presentations (IP)

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DESIGN, STUDY AND MANUFACTURING OF A COMPOSITE SOLID ROCKET PROPELLANT

Abstract

This paper discusses the work done to develop a solid rocket fuel, This grain was used to power a solid rocket fueled sounding rocket developed by Cairo University as a part of its program of developing sounding rockets, it is formed of heterogenous or composite propellant formed of Hydroxyl terminated polybutadiene (HTPB) as the binder, aluminum (Al) as the metal fuel, ammonium perchlorate (AP) as the oxidizer, and a series of different curing agents used. The paper offers also an overview of the technologies used for manufacturing of the engine and nozzles used in testing with a focusing view on the grain testing and technologies used to guarantee the grain mixture homogeneity and also the best performance from the grain. Heat transfer and flame propagation studies are also presented.