

MICROGRAVITY SCIENCES AND PROCESSES SYMPOSIUM (A2)
Facilities and Operations of Microgravity Experiments (5)

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DEVELOPMENT OF ILR – 33 AMBER SOUNDING ROCKET FOR MICROGRAVITY
EXPERIMENTS**Abstract**

Paper gives an overview of the development of ILR – 33 Amber sounding rocket designated for mi-

crogravity experiments, that was performed in Institute of Aviation in Warsaw, Poland. The lack of easy accessible and affordable platform for this kind of research was one of the key reasons for this work. Proposed design enables to perform experiments in microgravity for almost 150 seconds with apogee over 100 km. Combining this results with relatively low price per launch and short deployment time gives firm position on the market. The paper covers different type of payload considerations and cost analyses. This article describes also rocket design and its capabilities. Proposed design utilizes hybrid type of rocket motor with High Test Peroxide as an oxidizer along with two reusable solid rocket boosters. The early phase analysis of the rocket configuration and propellant considerations are also presented in the paper. Furthermore already performed testing phase including: wind tunnel research, motors design, manufacture and tests and drop down tests is also covered in this article. The proposed design is also considered as introduction phase for small rocket launcher that could deliver pico and nano satelites to LEO orbits. This solution is described by the possibility of rocket air-platform launch.