

IAF SPACE EXPLORATION SYMPOSIUM (A3)
Solar System Exploration including Ocean Worlds (5)

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A MICRO/NANO SATELLITE MISSION IDEA CONTEST FOR DEEP SPACE SCIENCE AND
EXPLORATION

Abstract

The Mission Idea Contest (MIC) was established in 2010 to provide aerospace engineers, college students, consultants, and anybody interested in space with opportunities to present their creative ideas and gain international attention. The primary goal of the Mission Idea Contest is to open a door to a new facet of space exploration and exploitation. Development of micro/nano-satellites started as an educational and research program primarily at university laboratories. As the micro/nano-satellite technology matures, it has spread rapidly across the academic world and industry for practical application. The Mission Idea Contest (MIC) organized by UNISEC-Global in cooperation with the International Academy of Astronautics (IAA) is an excellent driving force for students and engineers who are interested in space engineering to propose and design useful satellite missions. Six MICs and three pre-workshops for a MIC were organized in the past, and the 7th MIC will take place on Nov 22, 2020, in Kimotsukitown, Kagoshima, Japan, focusing on deep space science and exploration for the first time. Applicants will be required to propose a mission for deep space for micro/nano satellite(s) weighing less than 100 kg. A deep space mission with a micro/nano satellite is challenging, but we believe that students and researchers will find a way to overcome such challenges. In past contests, we observed MIC's positive aspects. Firstly, a MIC provides good training opportunities as a capacity building program. As a MIC does not require significant financial resources, students can participate. If they are selected as a finalist and cannot afford travel for their final presentation, they can also make a video presentation. Secondly, a MIC offers a chance to involve professional researchers and scientists to do mission design using micro/nano satellites. As a micro/nano satellite provides limited power and function compared to larger

satellites, trade-offs have to be carefully considered and choices should be made not to compromise the mission objective. Thirdly, a MIC can function as a catalyst to make a difference in the real world. With a MIC opportunity, many professional satellite engineers, including students, can start to weigh up their options, and what can be done to achieve their goals using micro/nano satellites. In this paper, the past contests are briefly introduced, and the detail of the “7th Mission Idea Contest for Deep Space Science and Exploration” is presented.

Keywords: Nanosatellite, Microsatellite, deep space, exploration, mission idea contest