

IAF SYMPOSIUM ON ONGOING AND NEAR FUTURE SPACE ASTRONOMY AND
SOLAR-SYSTEM SCIENCE MISSIONS (A7)
Technology Needs for Future Missions, Systems, and Instruments (3)

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SEA SLUGG - STUDENT EXPERIMENT AGAIN: SUBMARINE LAUNCHED INTO GRAVITY
FROM GDANSK

Abstract

Search for extraterrestrial life has been a drive wheel for space technology research for half a century. Recent research in astrobiology suggests that underwater oceans on Jovian moon Europa, Saturnian moon Titan and possibly asteroids may be a potential habitat for such microbial life. The unique combination of an actively recycled ice shell and rocky, possibly magmatic interior may give rise to a geochemical system suitable to life and not so terribly different from the terrestrial cryosphere, where the ice may act as a suitable interface along which melt and freeze provide chemical gradients of which life can take advantage. To investigate such environments, utilization of unmanned underwater vehicles (UUV) is proposed. This research proposes validation of a technology demonstrator of a UUV in microgravity conditions. Few typical control algorithms, both linear and nonlinear will be tested during a parabolic flight campaign. Along with visualization of streamlines with dye, this research may be a first insight into technical challenges of operating a UUV in a space underwater mission in search for extraterrestrial life. A student team project to verify the system in a parabolic flight campaign is presented including a prototype of the UUV, first test results and management of the student project.