

IAF SPACE EXPLORATION SYMPOSIUM (A3)
Interactive Presentations - IAF SPACE EXPLORATION SYMPOSIUM (IP)

Author: Mr. Mahir Rawal
India, mahirrawal.1234@gmail.com

THE ENCELADUS' DIVERBOT: - ITS DESIGN, PURPOSE AND ADVANCEMENTS

Abstract

Enceladus has attracted the attentions of scientists due to the discovery of water geysers pouring water from beneath the frozen surface by the Cassini mission, and the possibility of finding life on it. This ice moon is also home to an extra-terrestrial ocean (i.e. exocean). This exocean is over 40 kilometers deep and carries saline water with a heat source. Diverbot is a design presented to examine the availability of living forms and organic signatures. This Diverbot, which will carry scientific instruments, will be deployed to conduct research in Enceladus' oceans. The temperature gradient present within the water will be used to generate power. Buoyancy principles will be employed to move it vertically, while propellers and rudders will be used to maneuver it left, right, and around. Diverbot's major objective, in addition to the entire design and scientific observatory on board, will be to produce a 3D map of the exocean and geysers vents using acoustics. Exocean samples will be molecularly analysed, and organic matter will be observed using direct or indirect fingerprints existing in the samples. The final concept will be tested in simulations when it has been designed and modelled, and the operating circumstances will be recorded. Diverbot will be the first to supply us with samples to analyze for living stuff in the exocean, whether it is unicellular or multicellular life. As our curiosity in life and our existence grows, the solution must become more practical, and the most practical example of making matter alive is going to the deep waters of Enceladus. This research will give us with insights into the overall operation of Enceladus as well as the development of an explorer robotic submarine for Enceladus. The approaches used in this study are universal and may be recreated for any other ocean environment with minor changes.