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MEMS Technics for Sounding the Interior of Titanic Lakes

G. Bampasidis (1), A. Coustenis (2), A. Solomonidou (3) and X. Moussas (1)

(1) National & Kapodistrian University of Athens, Faculty of Physics, Dept. of Astrophysics, Astronomy & Mechanics, Athens, Greece (gbabasid@phys.uoa.gr) (2) LESIA, Observatoire de Paris, Meudon, France (3) National & Kapodistrian University of Athens, Faculty of Geology, Athens, Greece

Abstract

The successful entry, descent and landing of the Huygens probe in Titan in 2005 [1] introduced new standards in planetary probe science and engineering. In addition, Cassini's orbiter radar instrumentation has discovered large liquid deposits on the surface of Titan [2] but the depth, evolution and composition of these lake-like features are still unknown. The physical and chemical characteristics of the Titan lakes will be one of the major objectives of a future space mission to Titan [3].
Our contribution towards the lake analysis, through a probe entry, descent and landing, proposes MEMS (Micro-Electro-Mechanical Systems) as part of the science surface properties package on board of a Lake Lander. MEMS devices offer a low cost and reduced size of instrumentation in order to accomplish the 3D sounding of the liquid deposit and detect the presence of any biomakers in a broader area.

References

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[2] Stofan, E. et al. (2007) *Nature*, 445, 61-64.

[3] Coustenis, A. et al. (2009) *Experimental Astronomy*, 23, 3, 893-946.