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Microprobe experiment in frame of future Russian mission Venera –D

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Abstract

The new class of landers (*microprobes)* is proposed for investigation of Venus within Russian Federal Space Program VENERA –D mission to Venus (launch in 2016), including orbiter, balloons and lander.
Main features of the new class are:

- low mass,
- short time of descent due to streamlined form,
- several hours of activity on surface after impact.

To maximize time on the surface after impact we minimize descent time to half an hour. Perfect thermo-insulation may prolong duration on surface to 3 hours. Radio transmission to balloon gives opportunity of 2-3 hours of activity from the drop. Balloons float within the clouds or just below cloud deck. Duration of balloon mission should be several days. Leak of buoyant gas make us to drop ballast periodically. Instead of wasting useful mass we plan to drop periodically microprobes which then travel atmosphere vertically to get surface. Also microprobes can enter atmosphere from Venus hitting trajectory.
Scientific payload consists of atmospheric sensor package (p, T sensors and accelerometer) to have vertical atmospheric sounding and also descent camera which gives TV-image of the landing site during descent in the 1.0-μm transparency window to distinguish landing site surface geology type.