

MICROGRAVITY SCIENCES AND PROCESSES SYMPOSIUM (A2)  
Fluid and Materials Sciences (2)

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DEVELOPMENT OF FACILITIES TO ENSURE PROPELLANT CONTINUITY FOR LAUNCH  
VEHICLE TANKS AND PECULIARITIES OF THEIR DEVELOPMENT TESTING TAKING MICRO  
GRAVITY CONDITIONS INTO ACCOUNT**Abstract**

As space technologies develop, the requirements to spacecraft orbital injection parameters become stricter, including the requirements to SC cluster launch. To ensure spacecraft orbital injection with required trajectory parameters and required accuracy, the space and apogee stages with multiple propulsion system ignitions in space are developed. The repeated propulsion system ignition in the conditions of practical zero gravity is ensured by a number of design measures, including the propellant continuity ensuring facilities (PCF). The paper presents a classification of PCF in launch vehicle tanks for micro gravity conditions, makes an analysis of the design of capillary PCF applied, describes the methods of PCF designing to accomplish different tasks. The recommendations are given on the use of one or another PCF type in specific operation conditions. The peculiarities are noted of capillary PCF development testing with simulation of hydrodynamic processes occurring in launch vehicle tanks under zero gravity conditions. The methods of their modeling in the conditions of Earth gravity are considered and the results of solving some specific problems are presented.