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STAND PENTRU TESTAREA RACHETELOR PE COMBUSTIBIL SOLID CARE FORMEAZĂ GHEAȚĂ

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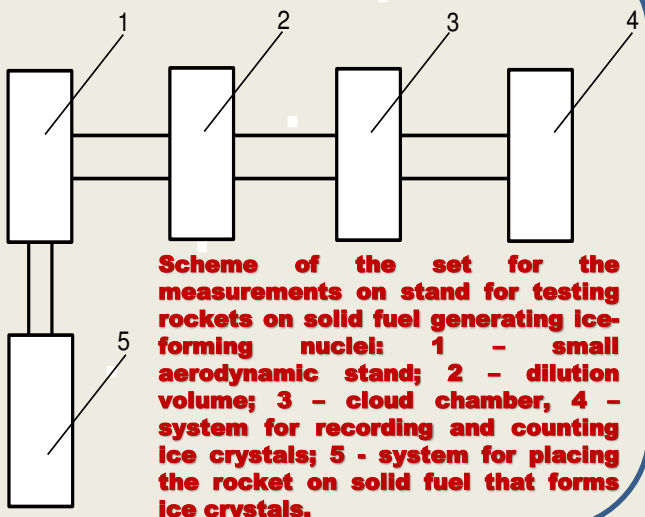
"INFOINVENT- 2021" Chisinau, Moldova

The technology is based on the use of a small aerodynamic stand, which makes it possible to test the yield of various rockets for active impacts on clouds, in particular, rockets with a propulsion engine that operates throughout the entire flight path and uses a new type of solid propellant. These rockets can significantly increase the yield of active crystallization centers per unit length of the seeding path.



Scheme of the set for the measurements on stand for testing rockets on solid fuel generating ice-forming nuclei: 1 – small aerodynamic stand; 2 – dilution volume; 3 – cloud chamber, 4 – system for recording and counting ice crystals; 5 - system for placing the rocket on solid fuel that forms ice crystals.

An experimental verification of the yield of active crystallization centers per gram of the composition of rockets on solid fuel generating ice-forming nuclei has been conducted at Ghitu IIEN on an upgraded stand, which makes it possible to test the rockets under conditions that closely simulate the flight conditions. The verification has confirmed the advantages of the rockets and shown that the yield of active ice-forming nuclei during the combustion of full-sized mid-flight rocket engines is ~10^{14} g^{-1} at a supercooled model fog temperature of -10^0C.

The tests conducted on a stand for testing rockets on solid fuel generating ice-forming nuclei have shown that, compared with a conventional anti-hail rocket, the tested rockets can significantly increase the yield of active crystallization centers. It has been shown that use of rockets on solid fuel generating ice-forming nuclei provides the high-efficiency seeding of hail-hazardous clouds with artificial nuclei and, as a consequence, the suppression of hail-formation processes in potentially hazardous clouds. It is significant that the aerosol is characterized not only by a high particle yield, but also an extremely high temperature threshold for crystallization (about -4^{0}C). This fact suggests that a fairly high yield of active crystals in the above temperature region will make it possible to implement active impacts to artificially increase precipitation and dissipate clouds.

The work was supported by the project PS Nr. 65/22.10.19 A "FUNCTIONAL NANOSTRUCTURES AND NANOMATERIALS FOR INDUSTRY AND AGRICULTURE".