

## Brief information about the project

Name of the project	AR15473470 «Technology for producing nanostructured materials using a vacuum arc installation»
Relevance	In recent decades, much attention has been paid to promising research in the field of ion-plasma technologies to produce new materials, as well as methods for applying metal coatings. The peculiarity of these technologies is the high quality of the materials produced in a vacuum, the low cost of raw materials and the high cost of technology in the final product. This project proposes the use of pulsed plasma accelerators, which are technologically more efficient due to the high flux energy density and high particle speed, to create new nanomaterials.
Purpose	The goal of the project is to develop a technology for producing several new materials by modifying the surface of materials under the influence of high-power plasma flows, as well as sputtering the surface of targets with pulsed plasma flows, followed by deposition of sputtered particles onto the surface of substrates.
Objectives	<ol style="list-style-type: none"><li>1. Development of a technique for producing nanostructured materials using the VDU-1 installation.</li><li>2. Sample preparation of the surface of crystalline materials to create conditions for the deposition of nanostructured layers.</li><li>3. Conducting experiments on the deposition of nanostructured layers on substrates with a prepared surface at various plasma parameters.</li><li>4. Study of the structure of microlayers on the surface of materials and analysis of composition, tribological parameters.</li></ol>
Expected and achieved results	<p>- for 2022 An analysis of plasma-chemical deposition methods will be carried out and a new technique for the deposition of nanomaterials will be proposed.</p> <p>- for 2023: Samples of materials with a treated surface will be obtained for the deposition and growth of nanostructures from plasma. Samples with structured layers deposited from arc discharge plasma will be obtained.</p> <p>- for 2024: The layer thickness, dispersion, density of structural formations and strength characteristics of the deposited layers will be determined. Two (2) articles will be published in journals in the first three quartiles of impact factor in the Web of Science database or having a CiteScore percentile of at least 50 in the Scopus database.</p>
Research team members with their identifiers (Scopus Author ID, Researcher ID, ORCID, if available) and links to relevant profiles	<ul style="list-style-type: none"><li>•Project Manager: Mukhamedryskyzy Marzhan</li><li>• Жукешов Ануар Муратович, д.ф.-м.н., профессор, h=3, Scopus author ID: 6506178953</li></ul>

List of publications with links to them	-
Patents	The project is patentable.