# Rustamzhon Usmanov

Applied mathematics and mechanics — fluid, gas and plasma mechanics

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An Uzbek scientist, graduate of Lomonosov Moscow State University, laureate of the State Prize of the Republic of Uzbekistan of the first degree in science and technology.

A specialist and researcher in applied mathematics and mechanics, and in the mining and metallurgical industry. Research interests span fluid, gas and plasma mechanics, numerical modeling of physical processes, and technologies for the extraction and production of rare, rare-earth and precious metals. A student of academicians Kh.A. Rakhmatulin and R.I. Nigmatulin.

Author of more than 30 scientific articles, invention patents and 2 defended dissertations. This site collects my publications and research results.

I have devoted more than 40 years to fundamental and applied science, travelling the path from the classical school of fluid, gas and plasma mechanics at Lomonosov Moscow State University to solving the most complex technological problems of Uzbekistan's mining and metallurgical industry. My approach is based on the intersection of applied mathematics, mathematical modeling and physico-chemical processes.

Today my research focuses on the search for fundamentally new, modern methods of disintegrating mineral components and liberating valuable metals from refractory raw materials by means of high-frequency and resonant treatment.

This site is created as an open platform for exchanging experience with scientists, engineers and industry practitioners from all over the world who are ready to develop the technologies of the future.

## Education

**1981–1986** — Postgraduate studies, Faculty of Mechanics and Mathematics, Lomonosov Moscow State University. Specialization: fluid, gas and plasma mechanics.

## Research interests

Fluid, gas and plasma mechanics · Numerical modeling of physical processes · Geotechnology of mineral extraction · Applied mathematics

## Key results

- More than 20 journal articles
- Invention patents
- 2 defended dissertations
- Scientific talks and reports

## Selected publications

**2026**. Золото, полученное в результате ядерных ВЧ-процессов. Горный вестник.

**2025**. Сравнение сорбционных свойств аэрогелей восстановленного оксида графена с соевым воском и политетрафторэтиленом. Журнал физической химии.

**2025**. Comparison of Sorption Properties of Reduced Graphene Oxide Aerogels with Soy Wax and Polytetrafluoroethylene. Russian Journal of Physical Chemistry A. DOI: 10.1134/S0036024425702231

**2023**. НГМК. НГМК.

**2022**. Способ дезинтеграции минеральных компонентов и вскрытия золота из особо упорных сульфиднозолотомышьяковых руд и концентратов резонансным воздействием ВЧ ЭМВ. Горный вестник Узбекистана № 2(89),2022, с.85-91. DOI:10.54073/GV.2022.2.89.019. Горный вестник Узбекистана. DOI: 10.54073/GV.2022.2.89.019

**2022**. Способ получения высокомарганцовистой стали. №IAP 06962.

**2022**. Способ переработки упорной углисто-сульфидной золотосодержащей руды. №IAP 06729.

**2021**. Способ извлечения золота из технологически упорных углисто-сульфидных золотомышьяковых флотоконцентратов. №IAP 20210573.

**2021**. Износостойкая сталь. №IAP 07075.

**2021**. Способ получения износостойкого полиуретана. №IAP 06895.

and other works — see the website and ISTINA profile