

IMPROVING THE METHOD OF CONDUCTING DEMONSTRATION  
EXPERIMENTS IN INORGANIC CHEMISTRY.

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*"Chemistry and methods of its teaching"*

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**Annotation:** *The article considers the aspects of demonstration chemical experiments as a source of knowledge, and its role in modern education is revealed. The effectiveness of the demonstration experiment depends on the literacy and correctness of its construction in combination with the conditions and requirements of the experiment.*

**Keywords:** *Chemical experiment, demonstration experiment, inorganic chemistry, content, technique, methodology, Water, salt (sodium chloride), baking soda (sodium bicarbonate), calcium carbonate (dietary calcium source), muriatic acid.*

Methods of teaching chemistry is a pedagogical science that studies the content of the course of chemistry and the regularities of its assimilation by students.

The teaching methodology of chemistry, as well as general didactics, solves three main problems: To teach what to teach, how to teach, and how to learn. "The first task is determined by the selection of material for...a chemistry course...The second task is related to the teaching of chemistry...The third task derives from the principle of 'teaching to learn': how to most effectively help students to engage...". The methodology of teaching chemistry is a relatively young branch of pedagogy.

The Chemical experiment gives chemistry as a subject a special specificity, as it is an important way of realizing the connection between theoretical and practical knowledge by transforming subject knowledge into beliefs. The chemical experiment in the process of teaching chemistry at higher education provides a closer acquaintance of students not only with the chemical phenomena themselves but also with the methods of the science of chemistry. The basis of chemistry teaching in higher education is the experiment, which is a research tool in the scientific study of nature.



Chemical experiment, as a method of cognition of chemical phenomena by students, is an indisputable proof of the objectivity of chemical knowledge. With the help of the experiment, students are convinced that chemical processes can be controlled, and the surprise of mysterious phenomena is changed by understanding. These processes obey natural laws, and knowledge of them provides the possibility of wide application of chemical reactions transformations in everyday activities of people.

A chemical experiment is a source of knowledge that is acquired by students, a means of preventing students' erroneous misconceptions, correction of knowledge, and finally, a way to test true hypotheses put forward by students and the teacher. While experimenting, "students carry out activities aimed at achieving meta-subject outcomes such as goal-setting, planning, searching for information, comparing, analyzing, synthesizing, controlling and evaluating".

A demonstration experiment refers to one type of chemistry experiment in a higher education institution. A demonstration experiment is an experiment conducted in the classroom either by a teacher, a laboratory assistant, or one of the students. It has a special role as an effective means of forming motivation for chemistry as a subject. Competently and correctly presented demonstration experiments in chemistry lessons can stimulate and activate the learning and cognitive activity of students.

Demonstration experiments are the most common type of verbal and visual methods of teaching chemistry. Performing a demonstration experiment develops students' ability to observe and explain chemical phenomena, to explain chemical phenomena, promotes interest in acquiring new knowledge, independence, and critical thinking. "Critical thinking implies experience and ability to analyze a situation, identify emerging problems, search for alternative solutions, distinguish productive ways of solving problems from ineffective ones, reject false ways".

Demonstration is a teaching method that uses visual aids to convey ideas. A demonstration is the process of teaching someone how to make or do something step by step.

The experiment pursues three didactic goals of school education - cognitive, developmental, and educational. It is possible to realize these goals with appropriate content, technique, and methodology.

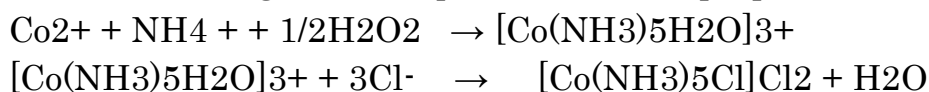
The requirements for a demonstration experiment were first formulated by V.N. Verkhovsky and developed by K.Y. Parmenov, A.D. Smirnov, V.P. Garkunov, and M.S. Pak.



Inorganic chemistry is a branch of chemistry related to the study of the structure, reactivity, and properties of all chemical elements and their inorganic compounds.

Water, salt (sodium chloride), baking soda (sodium bicarbonate), calcium carbonate (dietary calcium source), and muriatic acid (industrial-grade hydrochloric acid) are a few examples of commonplace inorganic compounds.

For example: For simple cobalt salts, the cobalt 2+ ion is more stable than the cobalt 3+ ion. There are very few known salts of Co (II), including CoF<sub>3</sub>. Complexation, on the other hand, stabilizes the higher oxidation state, and several extremely stable cobalt(III) octahedral coordinated complexes are known. The following are the equations used to prepare [Co(NH<sub>3</sub>)<sub>5</sub>Cl]Cl<sub>2</sub>:



Chloropentaamminecobalt (III) chloride synthesis is the aim. It calls into doubt whether or not the chloride atom is coordinated with cobalt.

In combination with technical means of teaching, demonstration experiment provides more effective mastering of knowledge, skills, and abilities. Systematic use of experiment in chemistry lessons helps students to develop the ability to observe phenomena, explain their essence in the light of the studied theories and laws, form and improves experimental skills, instills the skills of planning their activities and self-control, foster neatness, respect, and love for labor.

In conclusion, the demonstration experiment contributes to the education and all-round development of personality. It engenders correct and clear ideas about chemical phenomena and processes, reveals regularities, familiarizes with research methods, and illustrates technical applications of chemical laws.

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