**Induction**

The increasing development of countries’ industrial potential leads to the growth of metal consumption. Usual metal constructions  are operated in highly aggressive environments, and preserving the metal fund places high demands on structural materials not only in terms of mechanical and technological properties but also in terms of high corrosion resistance, reliability, and durability of products. In this regard, the role of corrosion disciplines in the training of materials scientists is increasing.  
To successfully combat corrosion, it is necessary to combine the experimental selection of new stable metallic materials and methods for their protection, and the study of basic corrosion process laws for a deeper understanding of many complex cases. Such an integrated approach will make it possible to predict the corrosion behavior of metal systems under real operating conditions and develop the most effective measures to combat corrosion damage.

This teaching aid is a course of lectures by the authors on the discipline "Corrosion and protection of metals". The material presented in the manual covers all sections of the course and ensures the acquisition and consolidation of a sufficient level of knowledge in the field of processes and phenomena occurring during the interaction of metals with the environment. The material presented in the lectures corresponds to the work program of the discipline in terms of content and volume. The training manual also summarizes the results of the AP 08855457 project "Development of innovative technology for obtaining nanocrystalline composite coatings for fuel cell and hydrogen energy electrodes".

The book is intended to provide methodological support for bachelor's training in the discipline "Corrosion and Protection of Metals" in accordance with the requirements of the educational program in the direction of training “Materials Science and Technology of New Materials”. The course of lectures on corrosion and metals protection is based on fundamental knowledge of physical chemistry, crystallography and defects in the crystal structure, physics of metals, mechanical properties of metals, methods of control and analysis of substances, as well as disciplines of general technical and special training cycles for bachelors. The tutorial is also intended for all specialists of physical and technical, engineering and materials science areas.