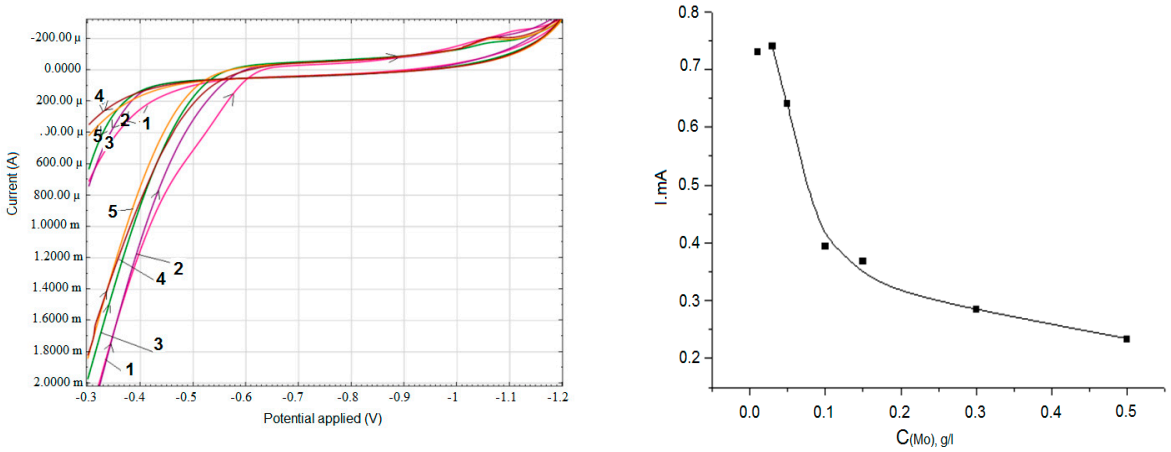
In Figure 1, the cathode maximum (A) is observed on the cyclic volt-ampere curves at a potential of −1.0 V.

In Figure 1, a cathode maximum (A) is observed on the cyclic volt-ampere curves at a potential of −1.0 V due to the electric reduction of hydroxide compounds formed on the surface of the steel electrode during anodic polarization. In the anodic part of the cyclic volt–ampere curves, with an increase in the number of cycles, a shift of the ionization potential of the iron electrode to the positive region was also observed, indicating an increase in its corrosion resistance.

A study of the effect of Mo (VI) additions on the electrochemical behavior of an iron electrode in a solution of 0.3 M Na_2SO_4 + 0.2 g/L Zr (IV) with various concentrations of Mo (VI) (Figure 2) was carried out.



(**a**) (**b**)

Figure 2. Volt–ampere curves of an iron electrode (**a**) and a change in the ionization current of the iron electrode (**b**) at different concentrations of Mo (VI). Electrolyte 0.3 M Na_2SO_4 + 0.2 g/L Zr (IV) + Mo (VI) (g/L): 1—0.1; 2—0.3; 3—0.5; 4—1; 5—1.5.

The concentration of Mo (VI) was changed from 0.1 to 0.15 g/L.

According to Figure 2a, the addition of small amounts of Mo (VI) from 0.01 to 0.2 g/L to the electrolyte composition led to a sharp decrease in the ionization current of the iron electrode (i.e., it contributed to the growth of its corrosion resistance). A further increase in the Mo (VI) content >0.3 g/L led to a smoother decrease in the ionization current of the iron electrode. More clearly, the change in the corrosion resistance of the iron electrode was seen from the dependence of the iron electrode ionization current, determined at a potential of −0.3 V, on the concentration of Mo (VI) ions in the electrolyte (Figure 2b). Thus, the optimal concentration of Mo (VI) in solution of 0.3 M Na_2SO_4 + 0.2 g/L Zr (IV) for the deposition of an oxide-zirconium coating was chosen to be 0.2 g/L, at which the ionization current was 0.28 mA.

The effect of the tungsten salt $C(NH_4)_{10}W_{12}O_{41}{\cdot}nH_2O$ on the electrochemical behavior of the iron electrode was studied (Figure 3).