Упругие модули как жидкого, так и стеклообразного глицерина при нормальном давлении заметно выше, чем модули соответствующих фаз пропиленкарбоната, что указывает на существенный вклад водородных связей в межмолекулярное взаимодействие в глицерине. Если начальные значения модуля B для данных веществ отличаются более чем в 2 раза, то производные по давлению близки ($B'(P) \approx 7{,}6$ для глицерина и $B'(P) \approx 8{,}6$ для пропиленкарбоната). Примерно такое же отношение (в 2–2,5 раза) как для значений модуля $B$, так и $G$ наблюдается в случае стеклообразных глицерина и пропиленкарбоната при 77 К при нормальном давлении, что также указывает на значительный вклад водородных связей в межмолекулярное взаимодействие в стеклообразном глицерине. Коэффициент Пуассона под давлением в стеклообразном глицерине оказывается меньше, чем в пропиленкарбонате (0,34 и 0,36, соответственно), что можно связать с влиянием водородных связей, определяемых в основном ион-ионным взаимодействием в цепочке $\mathrm{OH-O}$. Наличие водородных связей в глицерине приводит к увеличению начальных значений упругих характеристик в жидком и стеклообразном состоянии (в сравнении с пропиленкарбонатом), однако изменения упругих характеристик под давлением примерно одинаковы.


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## ELECTROPOLISHING AND ANODIC OXIDATION OF TI-15MO ALLOY


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Since 1950, when titanium alloys were introduced to industry, both titanium and its alloys have been frequently used. Titanium is resistant to a corrosive influence of many substances, including chlorine, due to the spontaneous formation of a thin compact oxide layer with good adherence to its surface. In the presence of oxygen, this layer is reproduced immediately after a mechanical injury. The thickness of the natural passive layer on the surface of titanium is of only a few nanometers, i.e., 1.5–10 nm. This layer consists predominantly of amorphous titanium dioxide. The advantages attributed to titanium have been exploited in the aircraft industry, power industry, chemical industry, and medicine.

To improve the surface quality and increase the corrosion resistance of titanium and its alloys, anodic electrochemical treatment is usually applied. Electropolishing is a very effective method of removing the layer formed on the metal surface during mechanical treatment. This layer is the reason for the increased electrochemical activity of the metal because it is characterized by a deformed surface structure. Additionally, a thin protective passive layer is formed in course of the treatment. After electropolishing the metal surface roughness is decreased, the scratches are removed, and the surface is characterized by a significant gloss.

We present study of modified by ectropolishing and anodic passivation surface of Ti-15Mo alloy. The electropolishing process was carried out in solutions containing sulfuric acid, ethylene glycol, ammonium fluoride and oxalic acid. Whereas a voltage range from 20 to 100 V and a 1 M orthophosphoric acid solution were used during the anodic passivation. The influence of above mentioned processes parameters on the quality of the obtained oxide layer on Ti-15Mo alloy was investigated. The analysis of Ti-15Mo surface after modification was performed using scanning electron microscopy (SEM, X-ray photoelectron spectroscopy (XPS). It was found that electropolishing leads to an increase in the surface homogeneity and to the form of an oxide layer, which consisted of $TiO_2$ and $MoO_3$. Whereas the oxide layers obtained during anodic passivation were characterized by different properties depending on the applied voltage. The anodic passivation at various voltages (20-100 V) increased the surface wettability ($94.5^{\circ}$–$87.6^{\circ}$) in comparison to the electropolished sample ($97.5^{\circ}$). Moreover, the obtained oxide layer after anodization exhibited a high hardness.

## CALCULATION SCHEME BASED ON THE EXTENDED EQUATIONS OF DMFT

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Extended DMFT equations were calculated by means of exact diagonalization method. Metal-insulator transition was considered for squared cuprate-like lattice and triangular lattices of F and H on the Gr. Additional peaks were found in low-energy region of spin susceptibility caused non-local interactions of lattice sites.

Heisenberg-type part in lattice Hamiltonian for case of magnetic interactions was added. It gives an opportunity to describe these systems more fully. The impurity Hamiltonian was changed in the following way: