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МЕЖДУНАРОДНАЯ КОНФЕРЕНЦИЯ
Перспективные материалы с иерархической структурой для новых технологий и надежных конструкций
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with metal coverage was examined in the research Pikul V.V. Shell from the material theoretically could withstand pressure at a depth of 6000 meters and could exceed 1,5-2 times extra high tensile titanium alloys.

For explore the possibility of strengthening glass at its connection with the steel, structure and properties of new material was developed the technology manufacturing rod based on glass and steel, which consists of glass core and the steel shell.

The aim of this study is the investigation of properties the glass-steel composite material.

Nowadays the technology of making glass-metal rods is at the stage of laboratory experiments. Glass rod is placed into metal body; this fit-up is heated in high temperature furnace to the temperature of glass melting. At the stage of brittle- ductile change the moveable forcer presses the glass mass and it fills the inner volume of the metal body. To investigate the phase composition and junction structure zone the samples were prepared, for which cutting and polishing the plated conductive layer of carbon was carried for a scanning electron microscope. By performing compression, tensile and torsional tests, the quasi-static properties of the selected glass, the steel and glass-steel-composite were determined. Indicators the corrosion resistance were determined with continuous control the parameters: loss of mass per unit area; rate of the mass loss; time, when the weight reduces on the allowable amount.

The results of the researches demonstrate the perspective of the new composite material made of glass and metal. Currently there have been worked out the processing conditions of producing composite rods which properties are comparable to conventional materials such as steel.

The new result of present study is a junction of glass and steel without using intermediate pads and adhesive joints. Microscopic examination prepared under different polished section conditions in the welding zone determine two level system which is situated in the glass and consisting of fayalite and amorphous layer containing iron cations.

The tentative analysis of applicability in building was done. Composite is noted to have good perspectives due to set of properties including low price of material, lightness and corrosion resistance.

STRENGTH AND PLASTICITY OF FE-CR ALLOYS

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High-chromium ferritic–martensitic (F-M) steels are attractive as promising structural materials for applications in nuclear facilities. In this work the analytical review of the scientific sources devoted to experimental and numerical studies on increase of strength and plasticity of new precipitation hardened Fe-Cr steels in native and foreign experience is presented.

Using multilevel modeling the yield stress were predicted for precipitation hardened Fe-Cr steels in the temperature range up to 1115 K and pressures up to 1 GPa.

The deformation to failure was predicted for Fe-Cr steels with increasing doses of neutron irradiation.