1. I.A. Dibrov Conducting major events in 2021 and 2022

2. World production of castings in 2019 (according to the magazine "Modern casting" 2021)

3. **V.S. Moiseev, B.L. Bobryshev, A.F. Smykov, D.V. Berezhnoy, I.V. Kontorovich** Automation of design of centrifugal casting of titanium alloys

The issues related to the automated solution of difficult-to-formalize technological problems of designing gating-feeding systems (LPS) during centrifugal casting of titanium alloys are considered. The main applied LPS schemes, the stages of melt movement in them and the influence of their design on the quality of the cast billet are analyzed.

Keywords: centrifugal casting, LPS schemes, filling, titanium alloys, shaped castings.

4. **V.I. Nikitin, K.V. Nikitin** On the development of the phenomenon of structural heredity in alloys

For the first time, the analysis of works in the field of the Phenomenon of Structural Heredity (PhSH) and Genetic Engineering Technologies (GET), presented in the materials of seminars and conferences in the period of 1980—2018 years was carried out. The main achievements in the development of PhSH and GET are presented. It is shown, that the work in this direction should be attributed to the category of high (»smart») technologies of the XXI century.

Keywords: aluminum alloys, the phenomenon of structural heredity, genetic engineering technologies, the results of research in the field of PhSH and GET

5. **A.A. Kreschik, D.V. Sukhorukov, V.A. Kechin** Technology of material preparation using polyurethane waste for the production of model equipment

The article presents the results of research on the use of three types of plastic waste for the manufacture of model equipment. The technology of composite preparation for the manufacture of model kits is proposed, which allows to preserve the strength characteristics, smoothness and clarity of the surface of the tooling. The proposed technology is most economically feasible for the manufacture of tooling for large model kits.

Keywords: model equipment, plastic, composite, waste.

6. **K.A. Batyshev, D.S. Sviridenko, A.V. Trofi mov, K.G. Semenov, Y.A. Svinoroev, M.G. Georgievsky, V.A. Khovanskaya** Improving the quality of automotive and tractor engine parts by injection molding with crystallization

The comparison of technologies for the production of automotive and tractor engine parts by injection molding and crystallization under pressure (LCD) is considered. The advantages of LCD technology in comparison with coquille casting are shown.

Keywords: injection molding, coquille, piston, pressing

7. **K.G. Semenov** Thermodynamics of diff usion deoxidation by carbon during melting of low-alloy copper alloys

The paper deals with the process of diffusion deoxidation of copper before the introduction of alloying elements. The analysis of the thermodynamics and kinetics of the diffusional copper deoxidation

processes was carried out with the determination of the time and quantitative parameters of the deoxidation to reduce the oxygen content in the melt to optimal values.

Keywords: low-alloyed copper, alloying elements, carbon, oxygen, kinetics, diffusion deoxidation, interaction parameters.

8. **I.A. Strelnikov, I.E. Illarionov, D.A. Pestryaev, Sh.V. Sadetdinov** Formation of physico-mechanical properties of mixtures based on phosphate borate binders

The results of the study of surface tension, wetting edge angle, density, viscosity and binding capacity of phosphate-borate binders based on aluminum dihydrophosphate, lithium, sodium and potassium metaborate are presented. Studies of density, viscosity, tension surface, wetting edge angle, binding ability of phosphate-borate compositions allow us to scientifically substantiate the choice of binder, based on the adhesive-cohesive ability, to obtain rod and molding mixtures cured in cold tooling. Cold-hardening mixtures have been developed using the following technology. In a batch mixer of brand 018M, 80.0% of sand 1K02A GOST 2138—91 and 5% of clay PZ GOST 3226—93 were mixed for 2 minutes. Then a 15% solution of phosphaborate binder was introduced, followed by stirring for 2 minutes until a homogeneous mass. The new phosphate-borate binders and mixtures meet the requirements of foundry practice in terms of physical and mechanical properties, and can be recommended for the manufacture of molding and core mixtures cured in cold tooling.

Keywords: aluminum dihydrophosphate, lithium, sodium, potassium metaborate, borate phosphate binder, surface tension, wetting edge angle, density, viscosity, binding ability, survivability, crumblability, formability, compressive strength, residual strength, knocking work.

9. Index of articles published in the journal «Russian Foundryman» in 2021