

## 1. 10th BRICS Foundry Forum

The Russian Foundry Association, with the support of the Ministry of Industry and Trade of the Russian Federation, is holding the 10th BRICS Foundry Forum in Moscow at the EXPOCENTER CEC during the International Exhibition of Foundry Technologies, Materials and LITMASH products from June 9 to June 11, 2020. Russian Chairmanship represented by the Russian Foundry Association is provided Charter and confirmed by the decision of the secretariat "BRICS - FA Secretariat", which is given below.

## 2. Conference "Foundry Union - foundry progress "

On November 13, 2019, Conference 7 was held. "Foundry Union - Foundry Progress production "in Moscow, during the International Industrial Exhibition "METAL-EXPO" at VDNH, pavilion 75, Hall number 1. The main objective of the conference was discussion of the creation of a single center of public organizations for the further development of foundry and foundry engineering in Russia. Conference prepared and held Russian Foundry Association, Russian Engineering Union and the College Military Industrial Commission of the Russian Federation. The main topic of the conference was discussion of proposals for expansion and revitalization of NPO "Union LiConference" "Foundry Union - foundry progress teyshchikov "which is created, is registered in the Ministry of Justice of the Russian Federation, the Charter was adopted.

## 3. D.A. Boldyrev, B.A. Kulakov, A.A Tokarev., L.I. Popova. Development of technology for the late processing of high-frequency melt by cast inserts and molded briquettes from graphitizing modifiers.

An analysis has been carried out to determine the peculiarities of the efficiency of application of the following varieties of materials used for post/late inoculation of ductile iron melts: in-mold solid cast inserts, ferrosilicon lumps, pressed and molded blocks placed in the pouring basins of casting molds, in-the-mold miniblocks and inserts. It was indicated that the most promising materials in the above list are molded blocks placed in the pouring basins of casting molds. They are mostly similar to ferrosilicon lumps in terms of dissolution kinetics.

**Keywords:** late (secondary) inoculation treatment, block, insert for inoculation treatment of metal.

## 4. Hosen Ri, N.A. Slavinskaya. Structuring, liquation processes and properties of cast aluminum alloy AM4.5Kd (VAL10), modified with strontium and zirconium.

Structural components in the Al-Sr and Al-Zr alloy alloys have been identified and their micro and nanohardness have been determined using X-ray microanalysis method. Al-Sr ligature (10 wt. %) consists of Al<sub>4</sub>Sr strontium aluminid (microhardness — 2799 MPa and nanohardness — 3230 MPa), strontium eutectic Al + Al<sub>4</sub>Sr (microhardness — 721 MPa), metal eutectic Al + Al<sub>3</sub>Fe and pure aluminum (microhardness — 442 MPa and nanohardness — 744 MPa). The structure of the zirconium ligature Al + Zr (wt. %: 1.62 O<sub>2</sub>; 0.29 Si; 4.11 Zr; the rest — Al) consists of fine dispersed Al<sub>3</sub>Zr crystals, of  $\alpha$ -solid silicon solution in aluminum, of  $\alpha$  + Si eutectic. Microhardness of  $\alpha$ -solid solution is 540.8 MPa and that of the eutectic — 983 MPa. Nanohardness of  $\alpha$ -solid solution is 741 MPa, and that of  $\alpha$  + Al<sub>3</sub>Zr eutectic — 8300 MPa. Nanohardness of the Al<sub>3</sub>Zr aluminide is 13400 MPa. The peculiarities of structure formation of the AM4.5Kd alloy components and their properties when modified with the increasing amount of strontium and zirconium (from 0.1 to 0.5 wt. % at a variation interval of 0.1 wt. %) have been investigated using the methods of optical and electro scanning microscopy and micro X-ray analysis.

**Keywords:** microhardness, hardness, eutectic and  $\alpha$ -solid solution, modification, nanohardness

5. **S.V. Davydov, D.A. Boldyrev.** Classification of methods modification cast iron from the iron-carbon standpoint of the structural state of the melt.

It is shown that the determining influence on the structural structure of the cast iron melt belongs to carbon. There are 3 characteristic levels in the structural selforganization of the cast iron melt and the corresponding 3 methods of modification: nanophase, nanoheterogenic and thermodynamic. The analysis of the applied modifiers is carried out.

**Keywords:** nonmetallic inclusions, structural state, melt, nanomodification.

6. **L.S. Kipnis, I.E. Medvedeva.** About the elastic-viscous model for forming internal stresses in thin-wall castings of complex configuration.

The article is devoted to the discussion of the scheme of internal stresses formation in a thin-walled cast, based on Maxwell's elastic-ductile model, its usage makes it possible to take into consideration their relaxation in wide, range of temperatures and estimate the influence of cast cooling speed on the magnitude of time and residual stresses.

**Keywords:** internal stresses, thin-walled casts, relaxation, velocity of cooling.

7. **V.B. Dudnichenko.** Shot blasting equipment for small procurement enterprises