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Belov N.A., Belov V.D., Tyurin P.Y., Grot A.N., Tverdov V. The influence of melt ultrasonic treatment on fusible phases morphology in alloys of Cu-1%Bi, Cu-30%Pb и Al-20%Sn.
The effect of ultrasonic treatment (UST) on the microstructure of model alloys Cu-1%Bi, Cu-30%Pb and Al-20%Sn was investigated. It was found a weak influence of UST on the morphology of low-melting eutectics in alloys Cu-1%Bi и Al-20%Sn, but it was observed the significant dispersing of led phase in alloy Cu-30%Pb. It was suggested that this difference may be connected with the fraction of liquid containing low-melting metal.
Key words: *copper and aluminium alloys, ultrasonic treatment, microstructure, solidification, low-melting metals.*

Dobrinina A.V. The criterions of elements selection for micro-alloying of low-carbon and low-alloy steels with purpose to reduce the cold brittleness.
The necessary condition of effective improvement of physical-mechanical properties of casted construction steel by micro-alloying and inoculation method is the additives positive influence on thermodynamic and kinetic parameters of phase transformations, development of chemical and physical alloy structural irregularity, solid-mortared and dispersed (grain boundary) strengthening. For selection of the parameters, determining the inclination of small additives inside alloys on the base of iron to enrichment of grain boundary by these additives it is proposed to use the criterions of grain boundary and surface activity. On the base of diagram, constructed on the base of calculation results the elements for micro-alloying are determined which are assist to grain-boundary strengthening.
Key words: *brittle fracture, grain-boundary strengthening, surface activity, grain boundary activity, segregation energy.*

Sandulyak A.V., Sandulyak A.A., Samokhin V.V., Polismakova M.N., Svistunov D.I., Ershov D.V., Ershova V.A., Kontopshikova A.V., Sandulyak D.A.
Magnetic «scanning» control of ferro-inclusions content in molding sands.
With use «enriched by ferroparticles» forming mixture (tests of different weights) the investigations of a laboratory method of polyoperational «scanning» magnetophoresis applied in another manufactures are carried out. Adaptation of this method to foundry manufacture is carried out, it is offered to use small tests of a forming material for this purpose, carrying out such number of operations, those are sufficient for objective extrapolation (and the subsequent integration) of received relation of operation-by-operation mass of ferroimpurities.
Key words: *concentration of ferroimpurities, forming materials, magnetic separator, polycyclic separation, magnetophoresis.*

Deev V., Selyanin I., Tsetsorina S., Degtyar V., Slobodchikov A. Research of the crystallization process of the casting alloys which are obtained with using secondorder basic materials.
Computation of crystallization parameters of the casting alloy АК7ч which is obtained with using various composition charge and trimmed with different physical modificating influences is carried out in the article. The visual programming language Delphi was used for the computation.
Key words: *liquid, physical modificating influences, casting alloy АК7ч, crystallization, critical radius of the germ, overcooling, visual programming.*