

Mathematical Relations for Harmonization with Technical and Decorative Casting Nature

Volodymyr Doroshenko¹, Olena Muł², Olena Kravchenko³

¹Physico-Technological Institute of Metals and Alloys,

²Ternopil National Ivan Puluj Technical University,

*³International Research and Training Center for Information Technologies
and Systems*

Abstract: We consider the optimization of the casting design in the concept of its interaction with two fluid technological mediums, namely, the interaction of its pattern with a sandy medium and the mold - with a metal. Copying observed in nature structures in metal is proposed as a metal saving method as well as an overview of the publications on the technical castings design according to this method is done. There are shown the examples of decorative castings, in the design of which the laws of the golden ratio and Fibonacci numbers are reflected, as well as castings, produced at the Physico-Technological Institute of Metals and Alloys (Kyiv, Ukraine).

Keywords – *casting design, metal saving, lightweight casting, lost foam casting, decorative articles, the golden ratio, Fibonacci numbers.*