## MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE ZAPORIZHZHIA NATIONAL UNIVERSITY

### VALERIY MISHCHENKO STEPHAN LOSKUTOV

# PHYSICAL AND MECHANICAL LAWS OF METALS STRUCTURE FORMATION IN THE PROCESSES OF TREATMENT AND DEFORMATION

Theory, Structuring and Mechanical Properties

Monograph



UDC 538.9:539.3:5:620.186.4:669.14 M75

#### Authors:

Valeriy Mishchenko, Doctor of Technical Science, Professor of Department of Descriptive Geometry, Engineering and Computer Graphics Stephan Loskutov, Doctor of Physical and Mathematical Sciences, Professor Department of Physics

#### **Reviewers:**

Sereda Boris Petrovich, Director of the R&D Center of Materials Science and Innovative Technologies, Doctor of Engineering, Professor of Dniprovsky State Technical University; Homeniuk Sergey Ivanovich, Dean of the Faculty of Mathematics of Zaporizhzhia National University, Doctor of Engineering

> Recommended for publishing by the Academic Council of Zaporizhzhia National University (Protocol No. 5 of 22.12.2022)

Mishchenko V., Loskutov S. Physical and mechanical laws M75 of metals structure formation in the processes of treatment and deformation. Theory, Structuring and Mechanical Properties : Monograph. Riga, Latvia : "Baltija Publishing", 2023. 184 p.

ISBN 978-9934-26-294-4

DOI 10.30525/978-9934-26-294-4

The monograph publishes the latest achievements in physics of metals and applied metallography by academic staff of Zaporizhzhia National University and Zaporizhzhia Polytechnic National University. Some contributions are devoted to the heat treatment of steels, the development of methods of advancing mechanical engineering components and increasing their reliability.

It is intended for research activities of undergraduate and postgraduate students. The monograph will be instrumental in the academic staff's lecture courses and practical classes.

#### UDC 538.9:539.3:5:620.186.4:669.14

ISBN 978-9934-26-294-4

© Valeriy Mishchenko, Stephan Loskutov, 2023