

PREFACE

In this handbook, the data on mechanical behavior and elasticity are collected, peculiar to the simplest forms of the following molecular crystals:

- inert elements – argon, krypton, xenon, and neon
- molecular substances formed by nitrogen, oxygen, carbon monoxide, ammonia, deuterioammonia, methane, deuteromethane, carbon dioxide, as well as
- quantum crystals of the isotopes of hydrogen or helium.

The book demonstrates the experimental data on uniaxial tension or compression strength and ductility, hardness, extrusion, impact toughness, creep, stress relaxation; it also delivers the elasticity characteristics like Young's modulus, shear modulus, Poisson's ratio, and elastic constants. The quantitative data are also given on the thermodynamic characteristics of plastic-deformation processes, lattice imperfections (dislocations, vacancies, and stacking faults), as well as on the effect of isotopic or chemical impurities on the elasticity or plasticity characteristics of the simplest molecular crystals.

The handbook is designed for the wide range of specialists that make use of simplest molecular substances (crystals) both in the research and application areas. It also may be of interest for the scientists, post-graduates, and students working in molecular physics or physics of plasticity, as well as in the engineering areas of spacecraft, high-pressure, or low-temperatures.