

## ABSTRACT

**Report on the practice:** 91 pages, 34 figures, 14 tables, 10 formula, 50 references.

**Object of study** - single crystals obtained by the temperature gradient using high pressure equipment sixhallmark solvent based Fe-Ni.

**Objective:** To examine the conditions of growing single crystals of diamond type Ib in terms of thermodynamic stability by crystallization of a molten solution based Fe-Ni.

**Techniques and methods of research** - using high pressure equipment CS-560, temperature gradient method for growing single crystals of diamond. The influence of temperature gradient on the growth of single crystals of diamond was investigated by changing heat high pressure equipment. The resulting diamond crystals studied by infrared spectroscopy, scanning electron microscopy, the study habit of growing diamond single crystals by using a goniometry method.

**The novelty of the work** is to obtain single crystals of diamond by the temperature gradient solvent based Fe-Ni using six hallmarks high pressure equipment.

**Actuality** - due to the use of structural necessity - of perfect single crystals of diamond in science and technology in particular, and its application in modern electronics.

SINGLE DIAMOND, THERMODYNAMIC STABILITY, TYPE 1B, METAL SOLVENT FE - NI