

Modern quantum computers impress with their performance and fast operation. However, they need very complicated and large equipment, necessary for proper work. It is primarily associated with the need to maintain a temperature close to absolute zero. The prospect of building a cooling system that corresponds to the dimensions of the heart of a quantum computer, which is a matrix of several atoms in a tangled state will make quantum computers much easier to use.

The NanometNE project is about investigation the Nottingham effect in MEMS (micro-electromechanical systems) structures. This effect occurs with the phenomenon of field electron emission. Under certain conditions, the emitter will be cooling down. Such emitters will be able to cool quantum computers.

The development requires a lot of research. The NanometNE material is particularly important. The emitter structures will be deposited with an electron beam in a scanning electron and focused ion beam microscope (SEM/FIB) chamber. The study of the Nottingham effect nature in nanoscale will be closely connected with the investigations of the deposition parameters and nanometrology of the electrical and thermal properties of the fabricated nanowires.