

ABSTRACT

Diploma work: 95 pages, 30 figures, 6 tables, 48 references.

Objective: three-layer MTJ-structure Fe-MgO-Fe alloyed with an additional ferromagnetic layer of conductive additives.

Methods: obtaining the object of research by the method of electron-beam deposition, measurement current-voltage characteristics and study of the electrical properties of a magnetic field modified by voltmeter-ammeter method.

Purpose of the study: to obtain a preliminarily defined structure with semiconducting properties by adding alloying materials.

Scientific novelty: the area with negative resistance on current-voltage characteristics of sample, characteristic of the tunnel diode, without using semiconductor materials.

Results: the area with negative differential resistance is obtained by alloying one of the conductive layers of ferromagnetic impurities in system Fe-MgO-Fe, mentioned the rapid oxidation processes in the flow of current through the sample, indicated new directions for research.

SPINTRONICS, MTJ-STRUCTURE, MAGNESIUM OXIDE, ELECTRICAL PROPERTIES, TUNNELING CURRENT, BAND THEORY, FERMI ENERGY.