D. Ghitu Institute of Electronic Engineering and Nanotechnologies

MD.111.

Title	**The method of oriented growth of single crystals in anisotropic glass-insulated microwires (for example, Bi and Bi-Sn alloys) in a strong electric field.**
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Patent no.	DECISION granting the patent no. 9394 of 2019.10.11
Description EN	The invention relates to the field of materials science and nanotechnology, but more specifically to the possibilities of obtaining a monocrystalline microwire in glass envelope with an arbitrary length and predetermined parameters. The object of the invention is to develop the technology of recrystallization of the microwire in the glass envelope with the final aim to obtain the necessary orientation of the main crystallographic axis C_3 in the microwire. The method according to the invention consists in that the moving microwire is heated to the melting temperature of the core with the formation of a narrow molten zone. The above-mentioned area moves along the microwire motion inside the capacitor, consisting of two copper plates that generate a strong electric field, where by means of the water crystallizer crystallize with the direction of the main crystallographic axis C_3 of the microwire in the direction of the electric field. The developed recrystallization technology in a strong electric field is the main and necessary component in the design of anisotropic thermoelectric energy converters based on a glass-insulated single-crystal microwire made of semimetallic alloys (Bi, Bi-Sn). This technology will allow for one cycle to produce highly sensitive heat flux sensors and anisotropic thermogenerators made from single crystal semimetal microwires in glass insulation.
Class no.	14