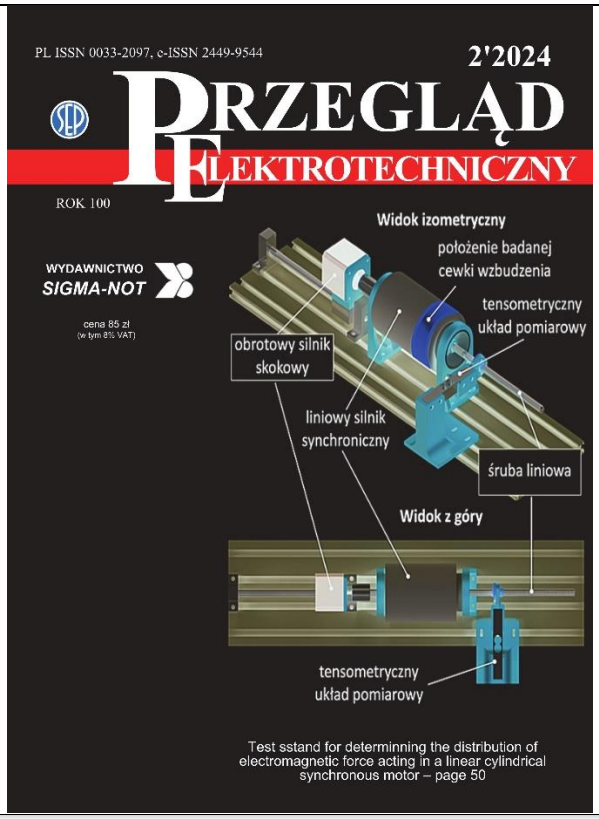
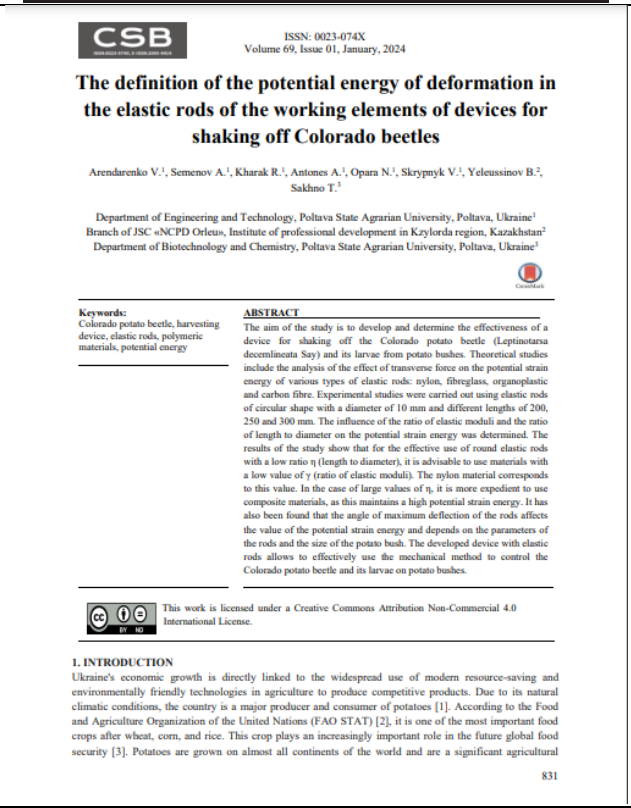


Anatolii Semenov, Stanislav Popov, Serhii Yakhin, Bauyrzhan Yeleussinov, **Tamara Sakhno** Assessment of the danger of using ultraviolet lamps in electrical systems. *Przeglad elektrotechniczny*, 2024. № 2. P. 152-155
DOI: 10.15199/48.2024.02 ***(Scopus)***



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The definition of the potential energy of deformation in the elastic rods of the working elements of devices for shaking off Colorado beetles

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Colorado potato beetle, harvesting device, elastic rods, polymeric materials, potential energy

ABSTRACT
The aim of the study is to develop and determine the effectiveness of a device for shaking off the Colorado potato beetle (Leptinotarsa decemlineata Say) and its larvae from potato bushes. Theoretical studies include the analysis of the effect of transverse force on the potential strain energy of various types of elastic rods: nylon, fibreglass, organoplastic and carbon fibre. Experimental studies were carried out using elastic rods of circular shape with a diameter of 10 mm and different lengths of 200, 250 and 300 mm. The influence of the ratio of elastic moduli and the ratio of length to diameter on the potential strain energy was determined. The results of the study show that for the effective use of round elastic rods with a low ratio η (length to diameter), it is advisable to use materials with a low value of γ (ratio of elastic moduli). The nylon material corresponds to this value. In the case of large values of η, it is more expedient to use composite materials, as this maintains a high potential strain energy. It has also been found that the angle of maximum deflection of the rods affects the value of the potential strain energy and depends on the parameters of the rods and the size of the potato bush. The developed device with elastic rods allows to effectively use the mechanical method to control the Colorado potato beetle and its larvae on potato bushes.

1. INTRODUCTION
Ukraine's economic growth is directly linked to the widespread use of modern resource-saving and environmentally friendly technologies in agriculture to produce competitive products. Due to its natural climatic conditions, the country is a major producer and consumer of potatoes [1]. According to the Food and Agriculture Organization of the United Nations (FAO STAT) [2], it is one of the most important food crops after wheat, corn, and rice. This crop plays an increasingly important role in the future global food security [3]. Potatoes are grown on almost all continents of the world and are a significant agricultural

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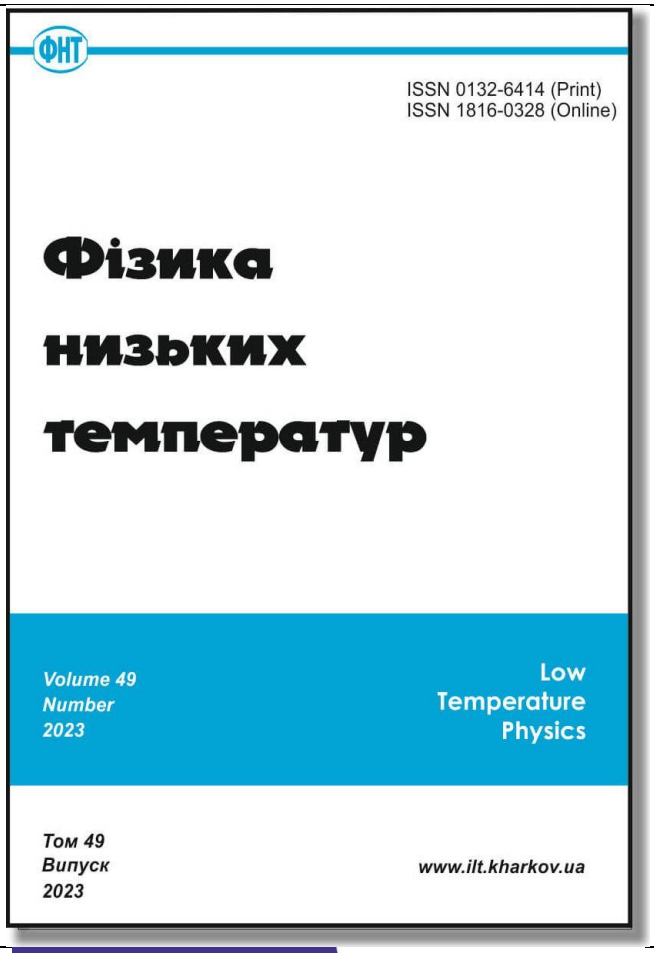

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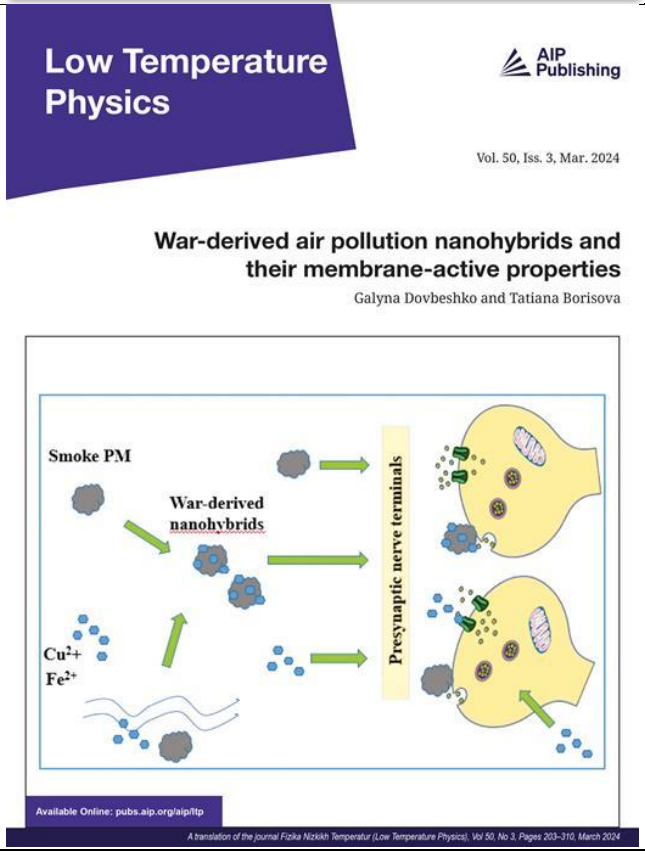

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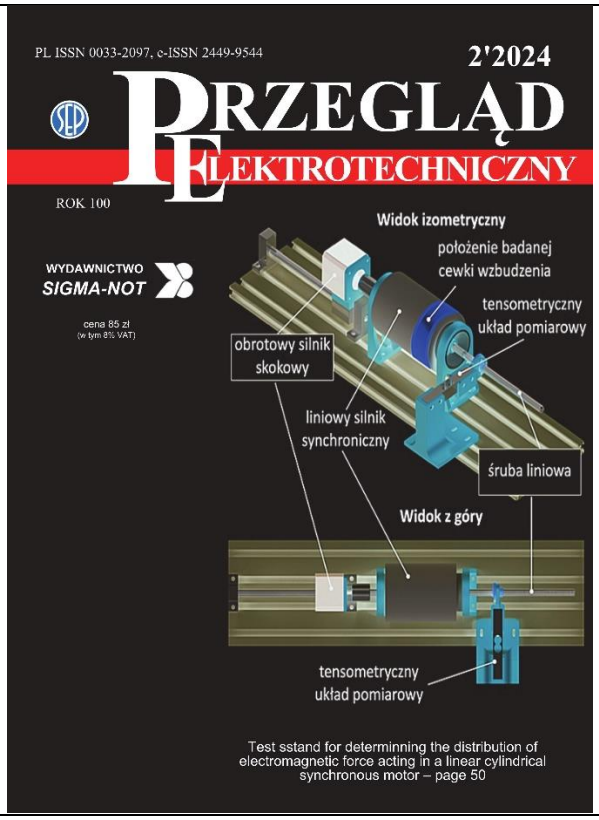

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