

The press service of the University of ITMO reported that scientists have developed an artificial synaps using crystals similar to the natural mineral tenorite. It turned out that under the influence of the laser, these crystals behave in the same way as synapses in the human brain. This discovery can become the basis for creating more effective neuromorphic systems that simulate the work of biological neural networks.

Unlike traditional computers, the brain processes information differently – neurons simultaneously store and analyze the data, responding to many analog signals. Modern artificial intelligence systems require huge computing resources, so scientists are looking for ways to reproduce the principles of brain function in artificial neural networks.

Tenorite crystals change their electrical activity depending on the frequency of laser radiation. The more often they act, the stronger the response. This behavior is similar to the reaction of biological synapses to neurotransmitters. During the experiments, researchers used crystals to teach a neural network to recognize manuscript numbers. After three attempts, accuracy reached 95%, which is a high indicator for such technologies.

It is important that artificial synapses maintain stability even after 13 thousand laser irradiation cycles. This makes them promising material for creating stable and energy-efficient neurosystems.