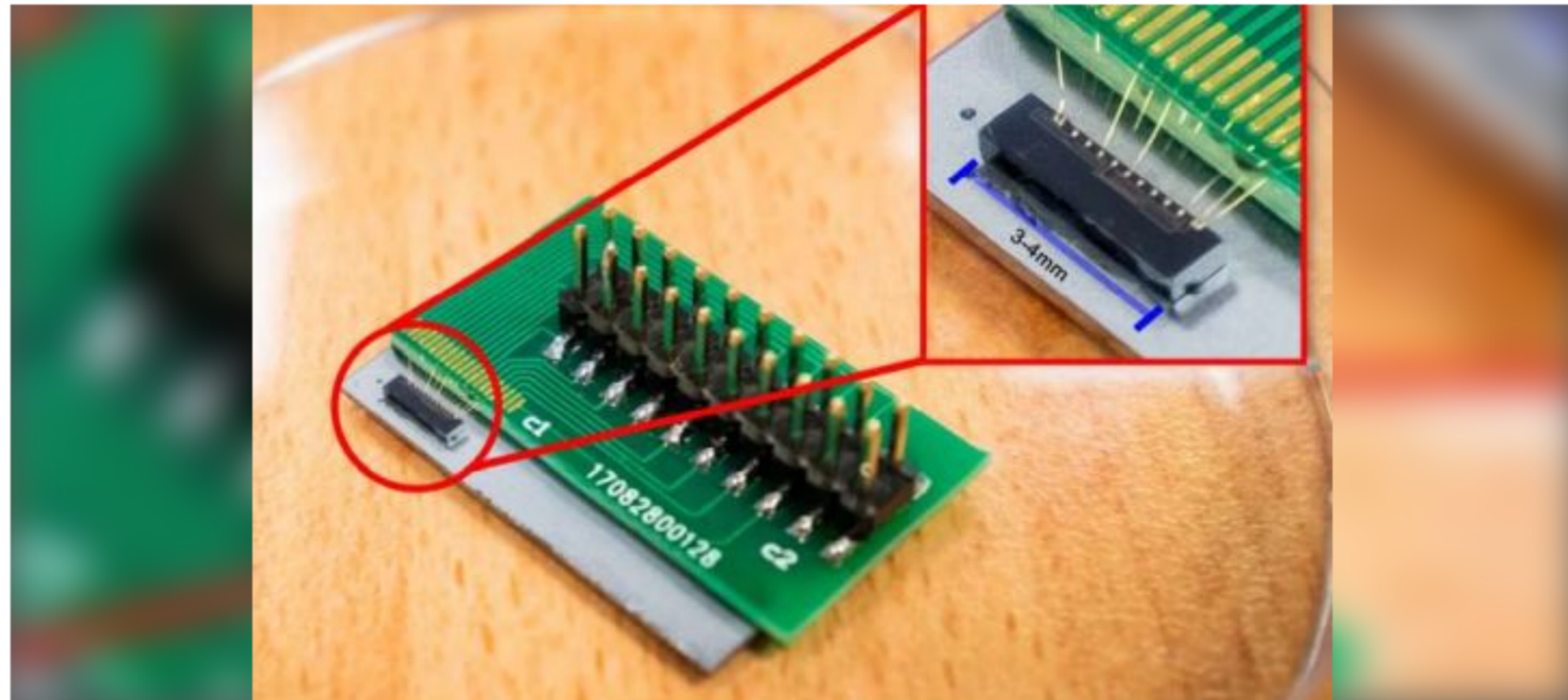


A new quantum communication chip has been created, the size of which is 1000 times smaller than the size of other similar devices

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Researchers from Nanyang Technological University, Singapore, have designed and manufactured a prototype of a new chip designed for use in the field of quantum communications. The most interesting in all of this is that the volume required to host this chip and its associated infrastructure is a thousand times smaller than the volume occupied by the smallest such quantum devices, however, the new chip provides the same full functionality as its more large "brothers".

The tiny chip, the size of which does not exceed three millimeters, uses quantum communication algorithms to hide the value of an identification code (PIN), password, or other critical information, encrypting it with a quantum key. In any attempt to intrude from the outside, this information, like the quantum encryption key, is irretrievably lost, which completely eliminates the possibility of unauthorized access.

The small size of the new chip opens the door for the introduction of quantum communication technologies in compact electronic devices such as smartphones, tablet computers and even smart watches in the future. This, in turn, will increase the security of online transactions and payments made through conventional means of communication.

"Cybersecurity is one of the most important aspects of the modern world, because most of the data we deal with is already in digital form," the researchers write. "Almost all digital platforms and repositories require passwords or biometric information from users, and so far there is the possibility of interception, decryption and illegal use of this information. Quantum technology completely eliminates this danger, since the password and other information are combined as part of the message being sent, forming each unique quantum key."

Another advantage of the quantum communication chip developed at NTU is that it can be made using existing technologies for manufacturing semiconductor chips from traditional materials such as silicon. This makes the use of the new chip inexpensive and economically feasible.

In the near future, researchers from NTU plan to create an experimental hybrid communication network based on traditional optical communication systems and the quantum technology developed by them. This will allow them to develop all the necessary related technologies and related software that will be able to protect even the Internet connection.