A new form of 'excitonium' is discovered.

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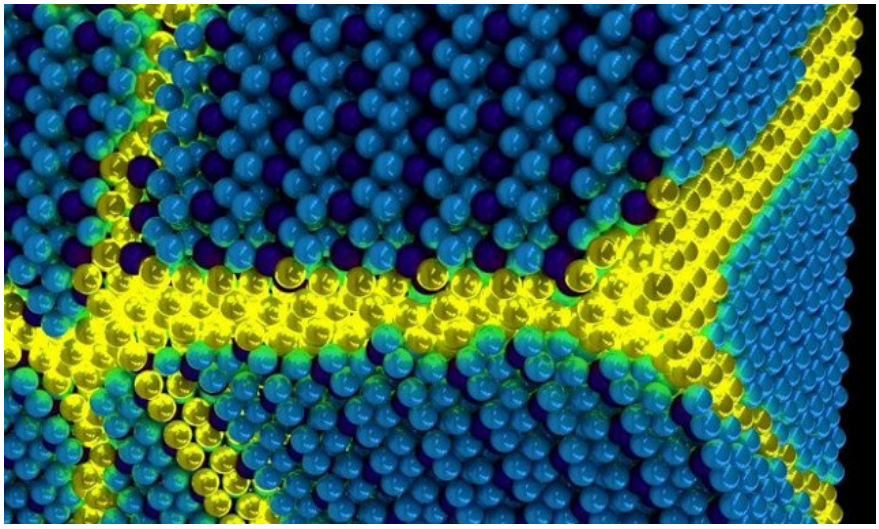
Excitonium is a condensate - it exhibits macro quantum nature, like a superconductor. It is made up of excitons, particles formed in a pair of strange quantum mechanics, namely of an electron released from a hole.



Research shows that when an electron, which exists in a semiconductor electronic material, is excited and jumps through the energy gap to a "molecular value hole."

The hole acts as if it is an overlay with a positive charge, and it attracts electrons to escape.

When the electron escapes with its negative charge, paired with the hole, the two poles form a composite particle, an exciton unit. In fact, the properties of particles around this hole are due to the gathering behavior of the crowd of surrounding electrons.

Abbamonte and his team have overcome the new challenge by using a new technique they developed called the liberating electron energy loss spectrum (M-EELS). With their new technique, the team was able to measure the collective stimulation of low-energy bosonic particles, electrons with mounting holes, regardless of their dynamics.

Peter Abbamonte, a professor at the University of Illinois, said: *"Since the term 'excitonium' has been in place since the 1960s by Harvard theoretical physicist, Bert Halperin, physicists have sought to prove survival. The theorists have debated whether it is an insulator, a perfect conductor or superfluid . "*

"Since the 1970s, many experimentalists have published evidence of the existence of excitonium, but their findings are not definitive evidence and can be explained by transforming the pine structure phase. often, " he said.

The researchers say these findings, published in the journal Science, promise to uncover more mysteries about quantum mechanics.

It may also shed light on the transition of metal insulators in ice solids, in which exciton condensation is thought to play a part.

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