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КАФЕДРА ІНОЗЕМНИХ МОВ
ЛІНГВІСТИЧНИЙ НАВЧАЛЬНО-МЕТОДИЧНИЙ ЦЕНТР

МАТЕРІАЛИ ІХ МІЖВУЗІВСЬКОЇ
НАУКОВО-ПРАКТИЧНОЇ КОНФЕРЕНЦІЇ
ЛІНГВІСТИЧНОГО НАВЧАЛЬНО-МЕТОДИЧНОГО ЦЕНТРУ
КАФЕДРИ ІНОЗЕМНИХ МОВ

“TO MAKE THE WORLD SMARTER AND SAFER”

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QUANTUM DOTS.

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The investigation of semiconductors quantum dot began in 1981 by Alexei Ekimov. Scientists started interested in quantum dot after the quantum effects were discovered in spectrum of many nanocrystals. The term “Quantum dot” appeared in 1988.

Quantum dot is a quantized electronic structure which properties differ from properties of volumetric material of equal structure. The particles inside it are located in a potential well that's why quantum dot have well-defined energy levels and its energy spectrum is really discrete. And this spectrum is more alike spectrum of individual atoms. That is why they sometimes are named artificial atoms.

A quantum dot can be any sufficiently small piece of metal or semiconductor such as cadmium, zinc, tellurium, selenium and sulfur. The point should be small enough for significant quantum effects. There are two main ways to make quantum dots. They are colloidal synthesis and epitaxy.

Due to the electroluminescence quantum dots are capable of generating light with high efficiency in a narrow frequency range, in addition they can be configured, selecting the size. It became possible to improve the picture quality on the display while reducing power consumption.

A lot of scientists and engineers started to work to create a real quantum computer, after the Richard Feynman's publication about the possibility of quantum computing. Quantum computer uses qubits that can be a 1 or a 0 or both at the same time.

Various kinds of organic dyes are used in medicine. A demand for a wider choice of colors grows each year. Quantum dots filled this field, because of their brightness, stability, narrow spectral bands and low toxicity (now investigated).

One of the latest discoveries was the possibility to use quantum dots as an instrument for controlling illegal copying of production.