Beat: Arts

Japanese scientists share Nobel Physics Prize for blue LED invention

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USPA News - Three Japanese scientists, Isamu Akasaki, Hiroshi Amano and Shuji Nakamura, have been awarded the 2014 Nobel Prize in Physics for their invention of blue light-emitting diode (LED), which allowed for the creation of white light in a new, energy-efficient and environment-friendly way. The Royal Swedish Academy of Sciences in Stockholm described this year`s award as an invention prize, rather than a discovery prize as is more common.

For instance, the 2013 Nobel Prize in Physics was awarded to two scientists from the United Kingdom and Belgium for their work on the theory of the Higgs boson particle. "We cherish the tradition that Alfred Nobel, who was a great inventor, wanted his prize to be given to inventions for the benefits of mankind, and that`s what we emphasized today, which is the usefulness of this thing and the usefulness in so many applications," explained Olle Inganas, a member of the Nobel Committee for Physics. Nakamura, who now lives in California and is an American citizen, said he was "very happy" to have won the Nobel Prize in Physics. "I was so surprised because I was not too sure whether I could win a Nobel Prize, you know, because physics, it means that usually people are awarded for the invention of the basic theory. But in my case, it`s not a basic theory, in my case it`s just making the device," he said. Red and green light-emitting diodes have been with us since the 1960s, but blue light was needed to be able to produce the white light that illuminates the world for us. Great efforts were undertaken in the research community as well as in industry in painstaking attempts to create blue light-emitting diodes, but all efforts failed until the early 90s. A light-emitting diode consists of a number of layered semiconductor materials, converting electricity directly into light particles, photons. This method leads to significant efficiency gains when compared to other light sources, such as incandescent bulbs and halogen lamps, where most of the electricity is converted to heat and only a small amount into light. In the mid-1980s, Akasaki and Amano were both working at Nagoya University while Nakamura was employed at Nichia Chemicals, a small company located in Tokushima on the Japanese island of Shikoku. The trio worked hard and took considerable risks in their attempts to develop blue LED, building their equipment themselves, learning the technology and carrying out thousands of experiments. Gallium nitride was the material of choice for all three men and they booked their first success in 1986, although it would take until 1992 - after thousands of failed experiments - before the scientists were able to present their first blue light-emitting diode, and thus revolutionizing lightning technology. During the 1990s, the men succeeded in further improving their blue LEDs by making them more efficient. Today, it is impossible to not notice the light from their invention: in home appliances or in LCD screens in television sets, computers and mobile phones, for which they also provide a lamp and a flash for the camera. The blue light-emitting LED allowed for the development of new, more efficient, cheaper and smarter lamps. As about one fourth of the world`s electricity consumption is used for lighting purposes, the highly energy-efficient LED lamps contribute significantly to saving the Earth`s resources. LED lamps, for instance, last up to 100,000 hours, compared to 1,000 hours for incandescent bulbs. When asked about their blue light LED invention on Tuesday, Nakamura said he "never expected" they would actually succeed, but explained he himself enjoyed solving problems. "Always there is a problem and I have to solve the problem. I like those patterns. It`s almost like research is sort of a quiz. So always, problems happen and I wanted to solve the problem. And so that`s why I continued to research," he explained.

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