

Making Impossible Possible. Wisdom opens the Future of Science and Technology.

Here is the history of all the researches and developments of blue LEDs.

Distinguished University Professor Isamu Akasaki of Nagoya University is the world noted researcher who pioneered development of the blue LED. His outstanding work is the pride of our nation. This invention of the century is applied in a variety of fields such as traffic signals, Blu-ray disc player, large-scale outdoor and indoor displays, and many others. It has given enormous contribution to our daily life.

LED Gallery at Akasaki Institute aims to make remarkable work by Professor Akasaki widely known to public, and to pass on his great achievements to the future. It also shows young generations the importance of university research giving back to society. LED Gallery displays all the history of the blue LED development, from the beginning of his research to products in our daily life in which blue LEDs are applied.



ZONE 2 Devices in Nagoya University Period

By using low temperature buffer layer technology, he and his group succeeded in growing high quality GaN single crystal. They then made achievements for p-type conduction in GaN followed by conductivity control of n-type nitride. These and other breakthroughs led them to successfully develop the blue LEDs by p-n junction.



Experimental Equipment

This is the first MOVPE reactor^① built by Professor Akasaki's group, with which they succeeded in growing high quality GaN single crystal. Based on this success, they achieved p-n junction LEDs with the second reactor^②, and finally developed blue LEDs.



160 inch LED display

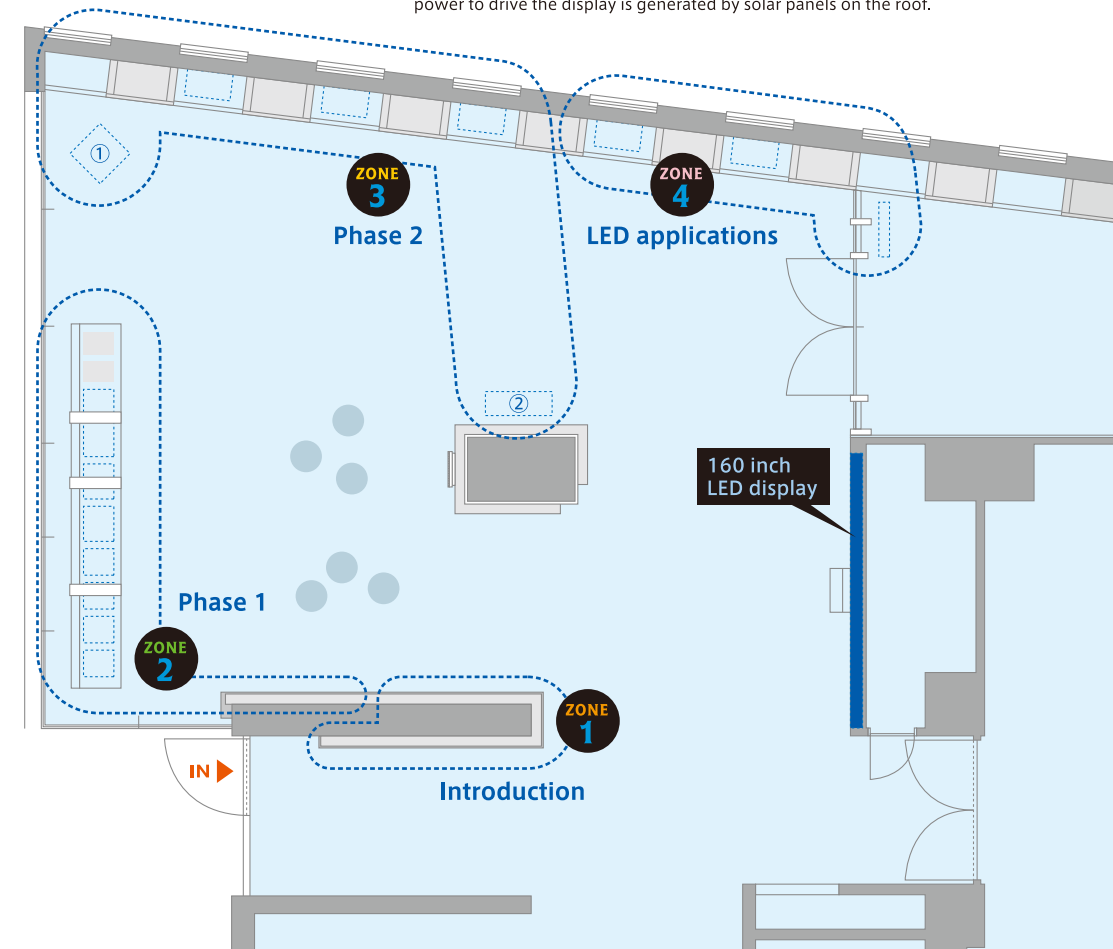
This 160 inch LED display was made possible by the development of high brightness blue LEDs by Professor Akasaki of Nagoya University. To produce full color, three primary colors are necessary, i.e., red, green, and blue. With the accomplishment of blue LEDs, it became possible to produce full color, large scale, high-resolution displays. This display was donated by Toyoda Gosei Co., Ltd., and the power to drive the display is generated by solar panels on the roof.



ZONE 4 Products with LEDs

With the commercialization of blue LEDs, demand for the LEDs growing bigger and bigger.

Now, LEDs are used in large-scale displays, traffic signals, backlights of mobile phones etc. Also with the development of higher brightness LEDs, they are expected for applications in various places, such as general lightings and automobile headlights.



吾道一以貫之

My way is penetrated by a single thread.

“It is impossible to achieve it within 20th century.” Almost all the researchers had given up in developing high performance blue light emitting devices (light emitting diode: LED, laser diode: LD). In 1989, Professor Isamu Akasaki of Nagoya University pioneered development of the blue LED. It was made possible by his persevering and continuous work over 20 years, and it brought us a “new bright light” towards 21st century.

Professor Akasaki achieved the blue LED based on his great success in growing single crystal GaN (gallium nitride). It was a revolutionary invention.

GaN semiconductor is used not only for light sources, but also for ultra high speed/high power transistors, and ultraviolet detectors. All of them are indispensable for the next generation Information Society.

吾道一以貫之 My way is penetrated by a single thread.

This is Professor Akasaki's motto. His strong and consistent belief led him to achieve the outstanding work, for which he was acknowledged as Person of Cultural Merits in 2004, as well as numerous number of honors. Nagoya University conferred him the title of “Distinguished University Professor.”



Distinguished University Professor
of Nagoya University

Isamu Akasaki

AKASAKI INSTITUTE GALLERY



LED

LED Gallery at Akasaki Institute

Opening hours ● Monday through Friday
10:00–16:00
Closed on Holidays
Admission fee ● Free

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