

October 24, 2019

**PRESS RELEASE**

KOITO MANUFACTURING CO., LTD.

## **KOITO's Lamps to be Used in Electric Vehicles Utilizing the World's First Gallium Nitride Devices**

KOITO MANUFACTURING CO., LTD. ("KOITO") (Head Office: Minato-ku, Tokyo; President: Hiroshi Mihara) announces that KOITO's lightweight and power-saving laser high-beam headlamps, LED low-beam headlamps, and other lamps will be used in the "GaN Vehicle," the first electric concept vehicle developed by Nagoya University that utilizes Gallium Nitride (GaN) devices.

Professor Hiroshi Amano and others' research group at Nagoya University's Institute of Materials and Systems for Sustainability launched a project by the Ministry of the Environment in FY2018, "Technological Innovation to Create Society and Lifestyles for the Future" and succeeded in developing the in-vehicle traction inverters\* for Gallium Nitride and became the first in the world to drive automobiles.

The application of gallium nitride to next-generation environmental vehicles significantly reduces carbon dioxide emissions and is expected to contribute to a low-carbon motorization society in the future.

As part of the achievements of this study, the "GaN Vehicle," an electric concept vehicle, is exhibited at the Ministry of the Environment's booth at the 46th Tokyo Motor Show 2019, held from October 23 to November 4, 2019. KOITO's lamps with GaN device (diode) light sources are used in the vehicle.

As GaN devices feature high-efficiency and high output than conventional semiconductors, our lamps achieved compactness, lightweight and power-saving.

KOITO is committed to further pursue the cutting-edge technologies and to develop "customer-first" products in order to enhance the safety and comfort of motorization society.

<KOITO's Lamps Utilizing GaN Devices>

- Laser High-beam Headlamps
- Lamps Utilizing LED Socket  
(Low-beam Headlamps, Position Lamps, Front Turn Signal Lamps, and Back-up Lamps)
- Rear Turn Signal Lamps
- Side Turn Signal Lamps with Integrated Camera

※ Traction inverters: Device to convert batteries' direct current power into alternating current power to drive electric automobiles, such as EVs and HVs.

(Reference)

**KOITO Aims to Spread the Use of Lamps with Overwhelmingly High-Efficiency and Sophisticated Designs**

1. Realized super power-saving and compactness by utilizing high-efficient GaN Devices
  - Five times the luminous efficiency, one-third the power consumption, half the lamp volume compared to halogen headlamps
2. Sophisticated designs: Designs to amaze users
  - Linear light-emitting turn signal lamps
  - High mounted stop lamp with transparent LED film
3. Initiatives to promote dissemination
  - Promoting LED penetration by replacing incandescent bulbs to LED sockets

**KOITO's Lamps Used in the GaN Vehicle**

A total of 9 KOITO lamps have been used in the “GaN Vehicle,” including 7 lamps with circle mark “○”.



Front View

○ **Laser High-beam Headlamps**

Compared to the LEDs, laser high-beam headlamp improves distant visibility while achieving super power-saving and compactness.

○ **Low-beam Headlamps (White LED)**

○ **Position Lamps (White LED)**

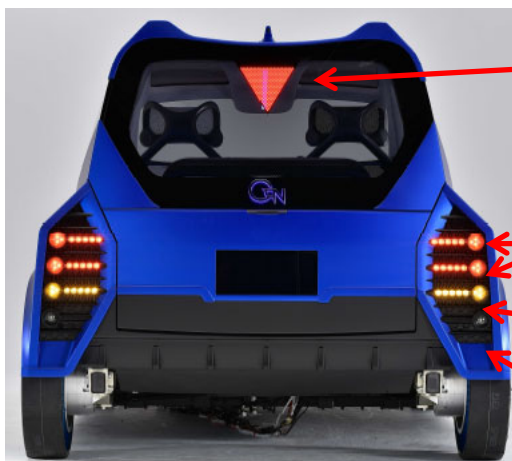
○ **Turn Signal Lamps (Amber LED)**

Utilized LED socket



○ **Side Turn Signal Lamps with Integrated Camera**

Integrated linear light-emitting side turn signal lamps with camera for electric mirrors and achieved compactness.



Rear View

○ **High Mounted Stop Lamp (Red LED)**

Ensured drivers' visibility by using transparent and bendable LED film.

○ **Tail and Stop Lamps (Red LED)**

○ **Turn Signal Lamps (Amber LED)**

○ **Back-up Lamps (White LED Socket)**

Utilized LED socket