

September 27, 2018

## **U.S. Patent Granted to Mitsubishi Chemical, National Institute for Materials Science, Nichia, and Citizen Electronics for LEDs Using Nitride-type Red Phosphor**

Mitsubishi Chemical Corporation  
National Institute for Materials Science  
Nichia Corporation  
Citizen Electronics Co., Ltd.

Mitsubishi Chemical Corporation (MCC; Head office: Chiyoda-ku, Tokyo; President: Masayuki Waga) today announced that an LED-related patent shared by MCC, National Institute for Materials Science (NIMS; Location: Tsukuba-shi, Ibaraki; President: Kazuhito Hashimoto), Nichia Corporation (Nichia; Head office: Anan-shi, Tokushima; President: Hiroyoshi Ogawa), and Citizen Electronics Co., Ltd. (Citizen; Head office: Fujiyoshida-shi, Yamanashi; President: Kanetaka Sekiguchi) has been granted in the U.S. The patent (U.S. patent No. 10072207) relates to the LEDs using a nitride-type red phosphor (Note 1 : red phosphor).

MCC, NIMS, Nichia, and Citizen in 2015 concluded a cross-licensing agreement for the red phosphor, which is broadly used in LED applications. Among the patents targeted by the cross-licensing agreement, the U.S. patent, the basic patent for the red phosphor is shared by the four companies, and now another basic patent related to LEDs using this type of red phosphor has been granted in the U.S.

MCC, Nichia, NIMS, and Citizen shall not overlook the group of patents related to the red phosphor and LEDs using this phosphor from infringement by other companies and take appropriate measures in case of unauthorized use of this patent group.

Note 1 : A phosphor with a basic composition of (Sr, Ca) AlSiN<sub>3</sub>: Eu, etc. It is a red phosphor, which is most broadly used for white LEDs thanks to its high brightness and reliability. This phosphor is generally called CASN or SCASN phosphor, or 1113 phosphor.

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