



SimuLAMP™

Software for Optical and Thermal Design and
Optimization of LED Lamps and Arrays

Phosphors and LEDs Database

Version 2.0

April, 2012

This document contains the references to datasheets, papers and presentations used to create manufactured LED and phosphors database. This database is available in LED_phosphors_database.lmp project file, which is provided with **SimuLAMP** package and can be found in Examples directory. The database can be used to import a certain LED or phosphor into user project.

The characteristics used to create **LED database** are taken or extrapolated from the datasheets available at the official web pages of the manufacturers:

- **Nichia** http://www.nichia.co.jp/en/product/led_library.html
- **OSRAM** <http://catalog.osram-os.com>
- **Seoul Semiconductors** <http://www.acriche.com/en/product/prd/zpowerLED.asp>
- **Cree** http://www.cree.com/products/led_docs.asp
- **Luxeon** <http://www.futureelectronics.com/en/technologies/semiconductors/lighting-solutions/high-power-led-emitters/colour/Pages/4571451-LXK2-PR14-Q00.aspx>
- **Marubeni** <http://tech-led.com/index.shtml>

Phosphor database is created based on the following articles and presentations:

- **YAG**
 - ✓ R.-J. Xie and N. Hirosaki, "Silicon-based oxynitride and nitride phosphors for white LEDs - A review", *Sci. Technol. Adv. Mat.* 8 (2007) 588-600.
 - ✓ V. M. Bachmann, "Studies on Luminescence and Quenching Mechanisms in Phosphors for Light Emitting Diodes", Ph.D. thesis (2007), Ch.5.
 - ✓ S. Fujita and S. Tanabe, "Thermal Quenching of Ce³⁺:Y₃Al₅O₁₂ Glass-Ceramic Phosphor", *Jpn. J. Appl. Phys.* 48 (2009) 120210.
 - ✓ M. Zachau, T. Fiedler, and F. Jermann, "Phosphors - Key Materials for Solid State Lighting", presentation at the workshop "LEDs in General Lighting", Ispra, May 3-4 (2007)
 - ✓ Y. Q. Li and H. T. Hintzen, "High Efficiency Nitride Based Phosphors for White LEDs", *J. Light & Vis. Env.* 32 (2008) 129-134.
- **Ca- α -SiAlON:Ce**
 - ✓ Rong-Jun Xie & Naoto Hirosaki & Mamoru Mitomo, Oxynitride/nitride phosphors for white light-emitting diodes (LEDs), *J Electroceram* (2008) , 5 September 2007, fig.1, 2

➤ **β -SiAlON:Eu**

- ✓ Rong-Jun Xie & Naoto Hirosaki & Mamoru Mitomo, Oxynitride/nitride phosphors for white light-emitting diodes (LEDs), J Electroceram (2008), 5 September 2007, fig.1, 2

➤ **CaSiAlN:Eu**

- ✓ Y. Q. Li and H. T. Hintzen, "High Efficiency Nitride Based Phosphors for White LEDs", J. Light & Vis. Env. 32 (2008) 129-134.
- ✓ Rong-Jun Xie & Naoto Hirosaki & Mamoru Mitomo, Oxynitride/nitride phosphors for white light-emitting diodes (LEDs), J Electroceram (2008), 5 September 2007, fig.1, 2
- ✓ R.-J. Xie and N. Hirosaki, "Silicon-based oxynitride and nitride phosphors for white LEDs - A review", Sci. Technol. Adv. Mat. 8 (2007) 588-600.
- ✓ William M. Yen, Shigeo Shionoya, Hajime Yamamoto, "Phospor Handbook 2nd edition", CRC Press (2007), ch. 5

➤ **BaMgAlO:Eu, Mn**

- ✓ Thomas Justel, "Fluorescent Lamp Phosphors: Is There Still News", PGS, Seoul, South Korea, 2007, sheet 10
- ✓ William M. Yen, Shigeo Shionoya, Hajime Yamamoto, "Phospor Handbook 2nd edition", CRC Press (2007), ch. 5

➤ **CSSiN:Eu**

- ✓ William M. Yen, Shigeo Shionoya, Hajime Yamamoto, "Phospor Handbook 2nd edition", CRC Press (2007), ch. 5
- ✓ Anant A. Setlur, "Phosphors for LED-based Solid State Lighting", The Electrochemical Society Interface, Winter 2009
- ✓ Rong-Jun Xie & Naoto Hirosaki, Silicon-based oxynitride and nitride phosphors for white LEDs—A review, Science and Technology of Advanced Materials 8 (2007), fig. 15
- ✓ M. Zachau, T. Fiedler and F. Jermann, "Phosphors - Key Materials For Solid-State Lighting", workshop "LEDs in General Lighting", EU JRC, Ispra, May 3-4, 2007, p. 14