

Prof. Shyan-Lung Chung

鍾賢龍 教授

Ph.D. : Chemical Engineering, The Johns Hopkins University,
Baltimore, MD, USA

Email : slchung@mail.ncku.edu.tw

Phone : 886-6-2757575 ext 62654

Office : Room No.93A16 (10F)



Research Interests

1. Process development for synthesis of high thermal conductivity Si_3N_4 , AlN and BN powders.
2. Process development for high thermal conductivity AlN or BN/polymer composites, grease, adhesives and pastes.
3. Sintering of AlN substrates for high power electronic and opto-electronic applications.
4. Process development for Synthesis of Si_3N_4 , AlN and BN nano powders and their applications.
5. Process development for low temperature conforming AlN/ceramic composites for microelectronic applications.
6. Synthesis of high-performance phosphor materials for LED solid state lighting.

Representative Publications

1. Shyan-Lung Chung* and Jeng-Shung Lin, "Thermal Conductivity of Epoxy Resin Composites Filled with Combustion Synthesized h-BN Particles", *Molecules* 2016, 21, 670.
2. Shyan-Lung Chung* and Shu-Chi Huang, "Effects of Ca Content on Formation and Photoluminescence Properties of $\text{CaAlSiN}_3:\text{Eu}^{2+}$ Phosphor by Combustion Synthesis", *Materials* 2016, 9, 178.
3. Shyan-Lung Chung* and Yu-Hsiang Hsu. (2015, Jan). Combustion Synthesis of Boron Nitride via Magnesium Reduction using Additives. *Ceramics International*, 41: 1457-1465, 2015.
4. Shyan-Lung Chung* and Shu-Chi Huang (2014, Dec). Combustion Synthesis and Photoluminescence Properties of Red-Emitting $\text{CaAlSiN}_3:\text{Eu}^{2+}$ Phosphor for White-LEDs. *Materials*, 7:7828-7842.
5. Shyan-Lung Chung* and Yu-Hsiang Hsu (2014, Nov). Combustion Synthesis of Boron Nitride via Magnesium Reduction under Low Nitrogen Pressures. *Journal of the American Ceramic Society*, 97[11]: 3418-3424, 2014.
6. Shyan-Lung Chung*, Shu-Chi Huang, Wei-Chi Chou and Wira Wibisono Tangguh (2014, Feb). Phosphors based on Nitridosilicates: Synthesis Methods and Luminescent Properties. *Current Opinion in Chemical Engineering*, 3:62-67.
7. Shyan-Lung Chung* and Wei-Chi Chou. Combustion Synthesis of $\text{Ca}_2\text{Si}_5\text{N}_8:\text{Eu}^{2+}$ Phosphors and their Luminescent Properties. *Journal of the American Ceramic Society*, 96(7):2086-2092(2013).

Patents Granted

1. Shyan-Lung Chung* and Yu-Hsiang Hsu, "Preparation Method for Boron Nitride Powder", ROC patent, No. 109144881, May25, 2016.
2. Shyan-Lung Chung*, Chun-Nan Lin, Chih-Wei Chang, Jing-Hsin Lin and Hung-Ing Lin, "Manufacturing Method for AlN", ROC No.I401206(7/11/2013), Japan, USA and China patents.

A. Synthesis of aluminum nitride (AlN) and boron nitride (BN) and their applications

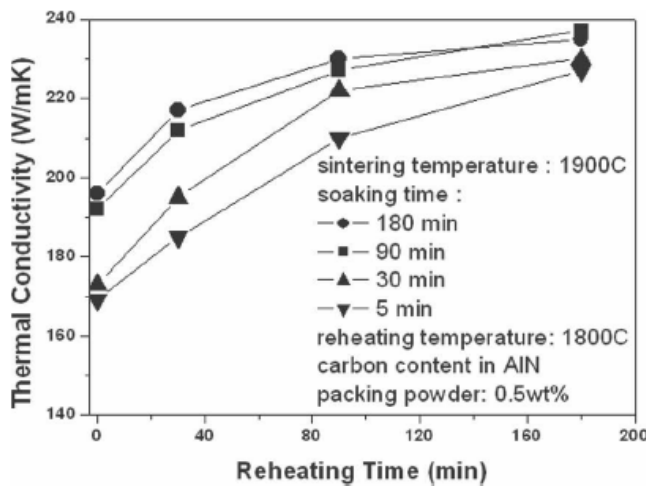
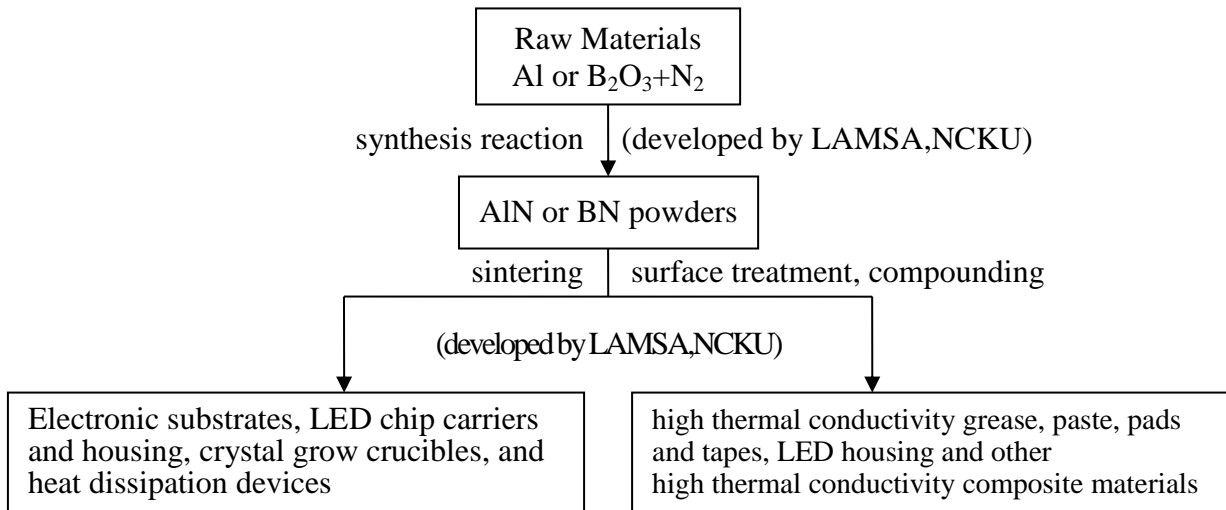


FIG. 8. Effect of the reheating time on the thermal conductivity of the sintered AlN specimen reheated at 1800 °C with a carbon addition of 0.5 wt%.

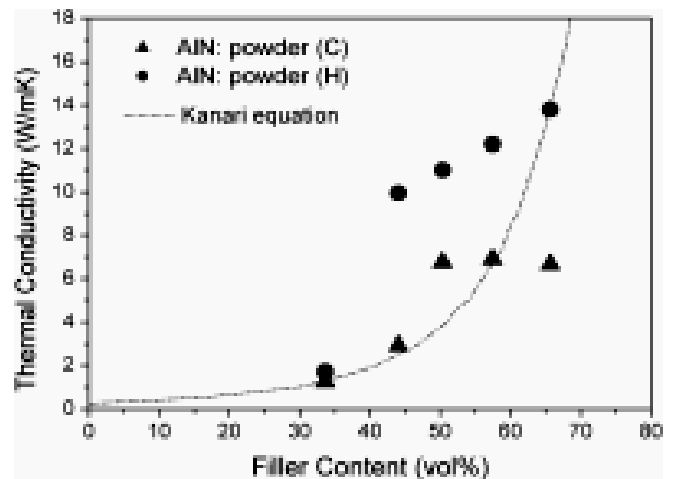


Figure 8. Effect of filler content on thermal conductivity of the EMC specimens filled with either powder C or H of the AlN.

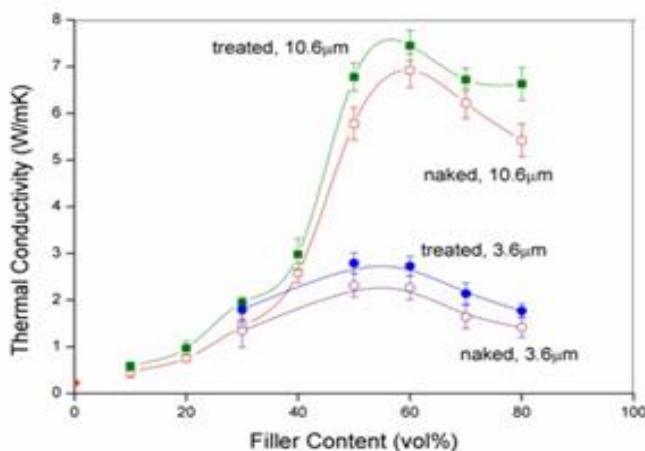


Figure 3. Effects of surface treatment, h-BN particle size and filler content on thermal conductivity of composites.

B. Synthesis of high-performance phosphor materials for LED solid state lighting

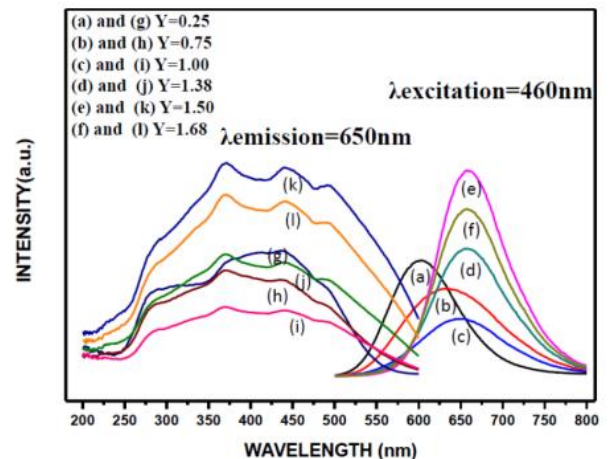


Figure 10. The emission ((a); (b); (c); (d); (e); and (f), excited by $\lambda = 460$ nm) and excitation ((g); (h); (i); (j); (k); and (l)) spectra of the phosphors synthesized with various Ca contents.