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Affiliations

- [Electrical and Computer Engineering](#)

Education Profile

- PhD, University of Tokyo, 1992
- MSc, University of Tokyo, 1985
- BSc, Tokyo University of Science, 1983

Research Interests

Professor Ohkawa's research interests include science and device application of energy-conversion phenomena toward a more sustainable future. Promising applications are solid state lighting and artificial photosynthesis. Ohkawa has refined MOVPE technique to the point where only his MOVPE can grow specifically designed InGaN as an essential component to fabricate efficient yellow- amber- and red-LEDs. InGaN is environmentally benign, and will snatch the device field by arsenides and phosphides. He is also trying to generate clean chemical energy from light energy by using nitride photocatalyst he invented. It is so-called artificial photosynthesis which produces not only H₂ from H₂O reduction but also HCOOH, CH₄ and C₂H₅OH from CO₂ reduction. Efficiency of nitride photosynthesis is already greater than average of biological photosynthetic one.

Selected Publications

- D. Iida, S. Lu, S. Hirahara, K. Niwa, S. Kamiyama, K. Ohkawa, "Investigation of amber light-emitting diodes based on InGaN/AlN/AlGaIn quantum wells", Jpn. J. Appl. Phys. 55, 05FJ06 (2016).

- T. Sekimoto, S. Shinagawa, Y. Uetake, K. Node, M. Deguchi, S. Yotsuhashi, K. Ohkawa, "Tandem photo-electrode of InGaN with two Si p-n junctions for CO₂ conversion to HCOOH with the efficiency greater than biological photosynthesis", Appl. Phys. Lett. 106, 073902, (2015).
- K. Ohkawa, T. Watanabe, M. Sakamoto, A. Hirako, et al., "740-nm emission from InGaN-based LEDs on c-plane sapphire substrates by MOVPE", J. Cryst. Growth 343, pp.13-16 (2012).
- T. Hayashi, K. Ohkawa, et al., "High stability and efficiency of GaN photocatalyst for hydrogen generation from water", Jpn. J. Appl. Phys. 51, 112601 (2012).
- K. Nakamura, A. Hirako, K. Ohkawa, "Analysis of pulsed injection of precursors in AlN-MOVPE growth by computational fluid simulation", Phys. Stat. Sol. (c) 7, pp.2268-2271 (2010).