ISA
International SSL Alliance

Address: Room 1305, Block 2D, Zhongguancun IC Park, No. 9
Fenghao East Road, Haidian District, Beijing, China (100094)
Tel: 86-10-62607581
Fax: 86-10-62607258
Email: secretariat@isa-world.org
Website: www.isa-world.org

ISA
International SSL Alliance

Solid state lighting (SSL) began with the discoveries and inventions in the second half of the 20th century, and continuous breakthroughs were made following the widespread application of semiconductors display at the end of the 20th century. In the new century, great strides have been made in SSL, which becomes a bright new star in the optoelectronic industry.

In recent years, manufacturing technology of semiconductors has matured with the improvement of SSL efficiency and quite a lot of advanced properties. While replacing traditional lighting, SSL has been applied to areas of "beyond lighting", such as agricultural applications, Micro-LED, LiFi smart cities, healthcare, photocuring, energy saving and emission reduction. It is foreseeable that with the concerted efforts of the industry, SSL as well as its technology and products will be extended on a larger time scale and applied in more areas. which will bringing more benefits to the world.

Current achievements and momentum in SSL can never be achieved overnight. Brilliant development is the result that built by many small successes over a long time period. Things by no means easy at the beginning, but will become more arduous subsequently. The current outstanding results of SSL are impossible without the efforts of the entire industry and the entrepreneurs. Recognizing their efforts and achievements will contribute to continue the success and entrepreneurship spirit of SSL.

In view of this, the 12th Executive Member Meeting of International SSL Alliance (ISA) decided to set up the "Global SSL Award of Industry Development Outstanding Contribution" (IDOC), and the selection will kick off in 2021. The award aims to recognize industry leaders, industrial organizations, project teams, institutions, etc. who have made outstanding contribution to the SSL development at regional and global levels within a certain time or historical period during the course of sustainable development of the global SSL.

I sincerely hope that the establishment of this award and the selection of its laureates will inspire more individuals and organizations to keep in mind of their original aspirations and mission, work hard for greater success, and inaugurate a new era of SSL.

Jianlin Cao

Jianlin Cao
President of ISA

ISA Introduction

ISA is a non-for-profit international organization consists of regional alliances, association/society, leading companies and renowned universities in global Solid State Lighting (SSL) field.

The Business of ISA members have covered the whole SSL value chain of upstream, middle stream and downstream of global SSL industry such as epitaxy, packaging application, materials and equipment, design system integration and testing etc.

The currently ISA 75 members, representing more than 4000 individuals & organizations includes major players (such as Signify, Osram, Smsung, GE Lighting, Cree, Veeco, AIXTRON etc.). The output of which covers more than 70% that of global SSL industry.

The ISA Board of Advisers consists of leading experts and academic "Founder" level experts, such as the inventors of blue LED, yellow LED, Red LED, and OLED. Amongst Professor Shuji Nakamura, the Laureate of Nobel Prize in Physics in 2014, is the Co-Chair of ISA Board of Advisors (BOA) and Professor Hiroshi Amano, the Laureate of the Nobel Prize in Physics in 2014 is the member of ISA BOA.

The major works of ISA are: provide services to promote the development and application of global SSL, standardization, annually Global SSL Industry Report, annually SSL Awards, promote international, national and regional cooperation on SSL, etc.

The Mission of ISA

Cooperation with the global resources and efforts, ISA looks forward to fostering a more appropriate "eco-system" for the health development of the global SSL and its application. Echo the needs of the society with more added value services to ISA members. Strive to improve people's living and contribute a sustainable human society.

Global SSL Award of Industry Development Outstanding Contribution

Purpose and Significance

The award was established as decided by the ISA 12th Executive Member Meeting, which aims to promote the global SSL sustainable development by recognizing the industry organizations, project teams, industry leaders, institutions, etc. that have made outstanding contributions to the SSL development at regional/global levels within a certain period of time or historical period.

Qualification of the Application

Industry organizations, project teams, industry leaders, institutions, etc. in the field of SSL who meet above criteria are all qualified to apply. The application content which has won another ISA award before is not qualified to apply this award.

Criteria for Selection

Within a certain period of time or historical period, those who have made outstanding contributions at the regional or global level and have greater influence in R&D of SSL technology, products, SSL application, standard development, and lead the developments of the SSL industry etc.

Frequency and quantity Of Selection

This award is given annually and no more than 5 winners per year in principle. Otherwise, it will be decided by ISA Executive Member Meeting in case of any special needs. The ISA Executive Member Meeting reserves the right not to make an award in any year.

Statement

Global SSL Award of Industry Development Outstanding Contribution

- Accept excellent applications;
- Judged by authoritative experts;
- Worldwide circulation and promotion;
- Welcome elites of the industry to sign up.

Global SSL Award of Industry Development
Outstanding Contribution

Dr. David Lacey

Biography

Dr. David Lacey is the Director of Advanced Development & Services, R&D for Osram Opto Semiconductors (M) Sdn Bhd, Penang – part of the ams OSRAM group. He has worked for Osram Opto Semiconductors for more than two decades, with his career in the company bringing him from Germany to the USA and currently, Malaysia.

Joining the company at the turn of the century, Dr. Lacey started his journey in organic light, initialising a new research and development facility in San Jose. Subsequently, he moved to Penang to further define process and equipment specifications to achieve higher volumes of OLED manufacturing in Asia. Promoted to general manager, he transformed his unit into a fully self-sufficient department, achieving a crucial milestone for the Malaysia plant in product development and R&D. Dr. Lacey then undertook the responsibility of worldwide profit and loss for OLED displays along with overseeing its marketing, sales support, production and development. Then, leading the charge in the early days of LED R&D in Asia, in 2007, he led the team that developed and launched Osram's 'Golden Dr.agon' High Reliability LEDs for Street & Industrial Solid State Lighting applications. As the current regional research and innovation director at OSRAM Opto Semiconductors (Malaysia), Dr. Lacey supports the development of both organic and inorganic lighting solutions along with their process research and development. Dr. Lacey's strong attachment to R&D is hardly surprising given his background.

Born in the United Kingdom, he received his Bachelor of Science degree in Chemistry and Materials Science from University of Sussex in 1988 and Doctor of Philosophy degree from the same university in 1993, researching ultra violet microscopy. After postgraduate work at Milliken Research Corporation, USA, and Ciba-Geigy SA, Switzerland, Dr. Lacey dived into the relatively new frontier of OLED, joining Cambridge Display Technology Limited (CDT), a start-up company spun out of the University of Cambridge in 1995. As a pioneer team member and later, technical manager, he contributed to the impressive growth of the company from a staff of six to 120 and a 100M$ IPO within five short years. Moreover, his drive for utilising and expanding R&D to its maximum potential continues to this day.

Having served as a member of the National Science & Research Council of Malaysia, Dr. Lacey is currently a director of the country's Collaborative Research in Engineering, Science & Technology (CREST) board. CREST spearheads collaborations and dialogues between industrialists and the Malaysian government with the aim of becoming a vital catalyst in creating a state-of-the-art local manufacturing ecosystem through an industry-academia-government partnership. Playing a crucial role of expediting R&D collaborations between academia and the industry, Dr. Lacey was appointed oversight committee chairman of the national "GaN on GaN" project involving four universities, government agencies and industry players, successfully positioning Malaysia at the forefront of developing highly efficient white LEDs, ultraviolet LEDs as well as other emerging applications.

His contributions in expanding LED opportunities in Asia and Malaysia in particular were ultimately recognised when Dr. Lacey received an honorary Doctor of Science award at the Arau Palace from a member of the country's royalty in 2021. He currently holds over 10 patents and 20 publications in the fields of energy efficient LEDs based on inorganic and organic materials.

Outstanding Contribution Brief

1. New creations and breakthroughs

With a strong background in academics and research, Dr. David Lacey has two-and-a-half decades of experience in the semiconductor industry, specifically in producing and enhancing organic and inorganic lighting solutions. With 24 publications and about a dozen patents under his belt, Dr. Lacey's foray into innovation stretches across multiple fields; from creating new devices to enhancing the durability and robustness of safety encapsulations to coming up with new methods of increasing production volume in efficient ways.

In the area of new device creation, Dr. Lacey holds patents in creating electroluminescent devices, organic light-emitting components comprising an electroluminescent layer and an optoelectronic component including a flexible carrier strip and an optoelectronic semiconductor chip. A large area of his focus over the years has also been centred on the bettering of the protective encapsulation for electronic components, making them less susceptible to damage from moisture and external influences. His patents in this area include the invention of a lead frame for a radiation-emitting component containing a protective layer for the reflective coating and enhancing protective encapsulation for electronic components, particularly electro-optical or optoelectronic components such as an organic light emitting diode (OLED), and producing such products efficiently by reshaping the encapsulation element using heat. They also cover the creation of an electroluminescent device having a protection layer in the cap bonding region that protects the layers below from damage during removal of polymer materials.

Aside from that, Dr. Lacey has created different methods of superimposing a plane encapsulation element and a drying agent on top of each other as well as a method of encapsulating an OLED by producing the organic optoelectronic component on a substrate wherein the organic optoelectronic component has an active region and regions with contact pads or scribe / rupture regions. He has also contributed in the improving of encapsulation for electroluminescent devices in relation to homogeneous or uniform deposition of active organic materials.

2. Bridging the gap

Albert Einstein once said, "Education is not the learning of facts, but the training of the mind to think." Wholeheartedly subscribing to this philosophy, Dr. David Lacey has spent over a decade bridging the gap between

academia and industry in Asia.

Moving to the small but industrially robust island of Penang, Malaysia, in 2002, the United Kingdom native began steering OSRAM Opto Semiconductors (Malaysia) into breaking ground in the field of organic and inorganic lighting solutions. From elevating and expanding process and equipment specifications to boost OLED production to leading the charge in LED research and development in Asia, Dr. Lacey's over 20-year commitment to the company is both impressive and noteworthy.

But beyond his role in the company as Director of Advanced Development & Services, R&D, Dr. Lacey has been hard at work in helping to realign Malaysia's higher education science curriculum. Long accused of consisting of programmes that were overly academic and insufficiently industry-relevant, science graduates in the country have faced increasing challenges in thriving in the high-paced world of electrical, electronic, software and semiconductor industries. Re-education in line with industry needs takes up precious time of which fresh hires have little of. To remain competitive both regionally and globally, Dr. Lacey knew exactly where to start - the universities. Aiming to build a strong ecosystem of technology and talent, Dr. Lacey began working to expand collaborations between local institutes of higher learning with not only industry players but also with international academic research hubs. Using ams OSRAM as a starting point, new relationships were forged with the Science University of Malaysia (USM) and its Institute of Nano Optoelectronics Research (INOR). Creating lines of communication and cooperation between the industry and academia, he believed, would not only open up new possibilities and ideas for the industry but crucially give insight to the country's future engineers and technical managers on the needs of the industries they would ultimately join. Dr. Lacey's efforts were soon noticed and he was asked to join the National Science & Research Council of Malaysia (MOSTI) to provide input to the Malaysian government on science-related policies.

Following that, Dr. Lacey was made a member of the board of directors of CREST – the Collaborative Research in Engineering, Science and Technology Centre, launched in 2012 to address Malaysia's needs in electrical and electronics (E&E) research, development and commercialisation.

3. GaN-on-GaN

When CREST was formed, the organisation identified the LED industry as a key area of development that could be expanded through collaborative R&D programmes. Their goal was to break into the global market for GaN research and position Malaysia as one of the top three LED solutions providers in the world. In 2016, Dr. Lacey was appointed as the Chairman of the Oversight Committee for Malaysia's "GaN on GaN" national project, which involved the participation of academia (Universiti Sains Malaysia (USM), Universiti Malaya (UM), Universiti Malaysia Perlis (UNIMAP) and Monash University Sunway Campus (MUSC)), government agencies (CREST and Northern Corridor Implementation Authority (NCIA)) as well as industry players (OSRAM Opto Semiconductors (Malaysia), Penchem, Inari and ITRAMAS). The aim of the project was establishing epitaxy capabilities for the Solid State Lighting (SSL) and LED industry in the country. Though GaN-on-GaN, participating universities engaged in international collaborative research involving high-quality patents and publications that demonstrated world-class achievements. One such instance was a technology transfer from the University of California, Santa Barbara, to Malaysia, which assisted in the production of the first-ever Malaysia-made high-brightness LED for white lighting application based on GaN on sapphire as well as GaN on GaN technologies.

Overall, the GaN on GaN research programme has trained over a dozen scientitsts and engineers on metalorganic chemical vapour deposition(MOCVD) and advanced LED fabrication techniques from 2017 to 2020 and produced

70 GaN search experts and engineers. Recent efficiencies of white LEDs approaching 200 lm/watt achieved in the program also reached commercially viable levels, a boon in translating research into business-viable solutions. This, ultimately, is an important stepping stone in positioning Malaysia at the forefront of developing highly-efficient SSL LEDs, ultraviolet LEDs as well as other emerging applications, such as power devices. Dr. Lacey's continuous innovation in the technology of LEDs as well as building up the ecosystem of LEDs in Malaysia has assisted the country on its route to become a high-income nation and achieving a more sustainable future. His guidance of research activities in academia with respect to LED technology has been pivotal in assisting students, researchers, scientists, and academicians to achieve a breakthrough for the advancement of science and technology in Malaysia.

For these reasons, in late 2021, Dr. Lacey was chosen as just one of four recipients that were conferred honorary doctorates from the Science University of Malaysia. Accepting the award at the Royal Palace of Arau in the state of Perlis, Dr. Lacey received an honorary Doctor of Science degree from a member of the country's royalty. Dr. Lacey also remains integrally involved in the local industrial scene, currently sitting as the president of the the Free Industrial Zone, Penang, Companies' Association (Frepenca).

Juries' Comments

- Outstanding contributions in photoelectric industrialization.
- He led the team that developed and launched Osram's 'Golden Dr. agon' High Reliability LEDs for Street & Industrial Solid State Lighting applications.
- Dr. Lacey's two-and-a-half decades work for innovation of OLED technologies in many aspects is very impressive.
- Dr. David Lacey had an excellent career contributing to science of SSL with patents and papers of his research, contributed to education and industrial development in Malaysia, and knew how to integrate industry, university and government for development.
- Outstanding contribution to the scientific and commercial development of SSL.
- Excellent background with R&D in LED and other emerging applications-his 25 years of research with 12 patents, speaks volumes about Mr. Lacey as a Chairman of Malaysia's "GaN-on-GaN," project was immense architects for the society and the LED Industry.

Global SSL Award of Industry Development
Outstanding Contribution

Mr. Qinghuan SUN

Biography

Mr. Qinghuan Sun was born in 1973 with Chinese nationality and no right of abode abroad. He graduated from Jiangxi University of Engineering. He founded MLS in 1997, and currently serves as the legal representative and chairman of MLS Co., Ltd.

Mr. Qinghuan Sun is an active pathfinder and outstanding representative of the LED industry. He has been involved in the industry, with a focus on technological innovation and management innovation. He works in a pragmatic manner as he steers the company to develop the market. The company pursues a distinctive path of innovation. Driven by “brand strategy” and “smart manufacturing”, it establishes a whole industry chain with “LED as the benchmark and its business extending to upstream and downstream areas of the LED industry chain”.

After more than 20 years of development, MLS led by Mr. Qinghuan Sun has evolved into a world-renowned leading LED enterprise. It has become a global tech enterprise specializing in LED packaging, lighting brand business, LED products and innovation business. MLS has over 100 subsidiaries worldwide, which cover over 140 countries and regions. It boasts six CNAS certified laboratories, and has over 20,000 employees worldwide, with an annual operating income of over 18 billion yuan. MLS is committed to providing healthier and more environmentally friendly products for mankind.

Outstanding Contribution Brief

1. Reduce product costs with technological innovation, promote industry changes, and popularize LED products

After founding MLS in 1997, Mr. Qinghuan Sun set about improving the process for direct in-line package LEDs. Following the purchase of automation equipment and process innovation, the company automated the LED packaging production process in 2005, and achieved a monthly capacity of 500 million. It is hailed as the largest LED packaging base in Asia. In 2012, Mr. Qinghuan Sun led the MLS team to produce “LEDs worth one dollar” through technological innovation and cost control, bringing affordable, high-efficiency, energy-saving LED products to the people. It has significantly popularized LED products in the Chinese market and the Asian market, and indirectly altered the landscape of the world LED industry.

Under the initiative of Mr. Qinghuan Sun, MLS funded the establishment of “MLS College” in cooperation with Ji’an Vocational and Technical College in order to train high-quality personnel for the semiconductor lighting industry and promote capacity building, and provide professionals for the sustainable development of the industry.

2. Promote green lighting worldwide, and commit itself to energy saving and emission reduction

Thanks to technological innovation made by MLS and a continuous decline in the cost of LED products, LED lighting products are being used in small cities and rural areas at a faster rate. As a result, LED lighting products are accepted in low-end markets, and more people can use affordable LED lighting products, thereby contributing to energy conservation and emission reduction.

Under the leadership of Mr. Qinghuan Sun, MLS has contributed to global green development, energy saving and emission reduction. MLS has made the “Green Lighting Commitment” at the “Global Lighting Challenge” Forum under the mechanism of the Clean Energy Ministerial in June 2017. 13 semiconductor lighting companies voluntarily made new commitments to produce and sell nearly 6 billion LED lighting products. Of these, 12 companies promised to produce and sell a total of 3.29 billion LED lamps and 5.77 million LED street lamps in the next two years (by the end of 2018). MLS promised to produce and sell 900 million LED-based products, ranking first among the 12 companies. Moreover, LEDVANCE, a subsidiary of MLS, pledged to sell 2.5 billion LED lamps by 2023.

If the aforesaid target can be achieved, the estimated energy savings will be equivalent to the generating capacity of 75 medium-sized coal-fired power plants.

3. Foster international cooperation in the semiconductor lighting industry, so that more countries and regions benefit from low-cost products

In May 2016, MLS announced that it would bid to acquire LEDVANCE, a subsidiary of OSRAM, through consortium. In March 2017, it completed 100% acquisition of LEDVANCE and completed the delivery of assets. In 2018, MLS completed the acquisition of LEDVANCE, so that Chinese LED companies participate in global competition by selling products overseas. It has integrated LEDVANCE in many areas and improved the supply chain and product structure, resulting in gains in the brand advantages and profitability of LEDVANCE. After acquiring LEDVANCE, MLS now owns foreign high-end lighting brands, including the centennial brands “LEDVANCE” and “SYLVANIA”. With overseas sales channels that cover 140 countries and regions, MLS has global brands and channel advantages in the field of lighting.

4. Innovation-driven exploration in more areas

Given the global adjustment caused by the COVID-19 in 2020, MLS established “GYGAIR Technology Co., Ltd.” in partnership with Guangdong Zhong Nanshan Medical Fund, etc., and launched five core solutions for air quality safety in public areas. These are used in conjunction with UVC surface disinfection technology. He plays his role as a responsible entrepreneur in the post-COVID era.

In 2021, MLS, under the leadership of Mr. Qinghuan Sun, explored and developed plant lighting, human-centric lighting and other high-end businesses. In cooperation with the Institute of Urban Agriculture of the Chinese Academy of Agricultural Sciences, MLS set up a platform for industry and research institute cooperation for the screening of pasture varieties, the optimization of environmental factors in plant factories, and the development and research on LED plant lighting solutions, contributing to the sustainable and high-quality development of the animal husbandry industry.

Beginning in 2018, MLS has been developing health lighting products based on LEDVANCE. MLS creates its own brand ecosystem through technological innovation, and explores the application areas of human-centric lighting.

Juries' Comments

- Remarkable achievements have been made in the field of whole industrial chain layout and international cooperation.
- MLS is a glorious brand and very ambitious manufacturing company in Asia. Flexible policy on the international market, a wide range of LED products. Global leadership claims!
- Mr. Qinghuan SUN’s numerous achievements in improving LED package production and green lighting developments through foundation of MLS is very impressive.
- Engineer Qinghuan SUN made an excellent contribution for the lighting world with his MLS company, developing brand strategy, smart management, funded a vocational college, foster international cooperation and also contributed for the quality of the air.
- Outstanding contribution to the development of SSL through strong leadership in the growth of this important technology.
- Mr. Sun’s achievement in LED business its most improve. His mission for providing energy saving and emission reduction is commendable. Largest packing makes his world largest manufacturer.

Global SSL Award of Industry Development
Outstanding Contribution

Professor Luoxi HAO

Biography

Professor Luoxi Hao is the vice-president of CIE, member of ISC-CHINA, invited vice president of China Illuminating Engineering Society, and member of the senior committee of experts of China Association of Medical Equipment currently. Professor Hao has been engaged in the teaching, scientific research, and engineering practice of light and human health for a long time.

In recent years, Professor Hao has led the collaboration between medical and industry, gathered interdisciplinary talents, established the "International Health Design Joint Innovation Group", developed a research platform for environmental human factors, undertaken scientific research projects such as national defense science and technology innovation, national natural science foundation of China, key research and development program of the ministry of science and technology, and carried out evidence-based research and application of human health in human settlement environment. Professor Hao participated in China's 29th Antarctic scientific expedition and completed the high-fidelity anthropogenic health lighting polar experiment at Great Wall Station personally. It takes the lead in proposing intelligent health lighting technology for defense the deep sea and coping with confined stress environment.

Focuses on the polar day and polar night environment in the Antarctic initially and study the intelligent human factors health support system to promote the research crews physical and mental health adaptation to extreme environment. Professor Hao established the theory of "environmental healing and active health lighting intervention" and the key technology system of "visual performance-physiological regulation-psychological intervention". The standard parameters and index thresholds values of ecological health city lighting is put forward, which provides scientific support for the establishment of standard control. The research results have been applied in demonstration and won the first prize of Science and Technology Progress of China National Light Industry Council, the second prize of Shanghai Science and Technology Progress and other awards.

She has published more than 100 papers, eight monographs and nearly 30 national patents. Professor Hao has published the academic monograph "Light and Health", one of the key publications of Shanghai, and organized the global training of the important publication CIE S026.

Outstanding Contribution Brief

Professor Luoxi Hao leads an interdisciplinary team to carry out research on the health lighting human settlement environment theory and evidence-based design method and establishes a medical and industrial cross-collaboration platform for the research on built environment and human health; coordinate and organize project research, research and development, production and application, and enhance industrial promotion of research results by application demonstration; through the performance of duties by international academic organizations, the organization of academic exchanges and health popularization of science lectures, which enhanced the social public welfare value of the achievements and academic influence at home and abroad.

1. Healthy lighting theory and evidence-based design method of human settlements

First, Professor Luoxi Hao broken through the single functional application of light and lighting visual effect, and the multi-dimensional effect of light visual, physiological, and psychological is used to adjust and improve physical and mental condition and improve human settlement health. Due to the multi-factor interaction between lighting environment elements and human health factors, the research content of health lighting is extensive, and the system is complex, so it is difficult to realize the achievement transformation. Therefore, interdisciplinary teams of architecture, urban planning, medical treatment, psychology, lighting industry and electronic information have been set up. The concept of active health intervention based on human living lighting environment was put forward, and the health lighting theory of human settlement environment was developed, including photobiological safety and injury prevention, lighting healing of health imbalance and active intervention of health steady state.

Health lighting effects can be experienced but hard to quantify, traditional design methods rely on experience to make decisions, lack of empirical evidence and in low reliability, and photobiological mechanisms obtained in controlled laboratory environment, which cannot solve the constraints of complex system design in human settlements. An evidence-based design method for health lighting was established, which was named "association mechanism analysis - high-fidelity human factor experiment - demonstration application and post-use assessment (POE)", and a cross-evidence-based research model for health living was established. Based on the built environment disciplines characteristics and requirements of engineering practice, a set of subjective and objective experimental research paradigm was put forward by Professor Hao to guide the high-fidelity human factor experiment environment built and self-reported, physiological signal feedback, biochemical index analysis, behavior observation multi-source human factor data collection, to ensure the reliability of the experimental results, the matching between the design objective and scientific.

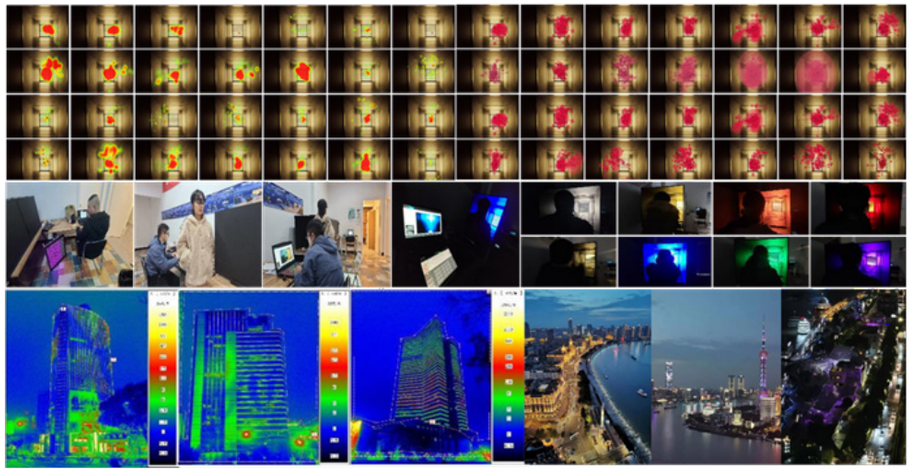
2. Active health light intervention technology for the differentiated needs of the whole age population and coping with extreme environmental physical and mental stress

Based on the specific population, region, environment and space, Professor Hao started with the response mechanism and model of photobiology, and carried out the whole chain collaborative research of health lighting theory construction and evidence-based design method, key technologies and integrated system of active health lighting intervention, demonstration application and control standard, aiming at strengthening basic research, applied research, development and industrialization of fusion test, shorten from principle to the laboratory to large-scale residential application period of time, make residential health lighting as a science problem theory and technical support, to avoid confusion and misuse caused latent, cumulative irreversible damage to health; as well as to control excessive urban landscape lighting and light pollution that cause physical and mental health problems of people effectively; and form an iterative and updated technical system to maximize the health promotion role of light in the living environment and benefit people's livelihood.

Professor Luoxi Hao is problem-oriented and based on the differentiated health characteristics and health needs of the whole age population, proposes the combination of customized lighting parameters and the whole-time healing lighting scheme, so as to realize the individual and precise active intervention of lighting. At present, Professor Hao has completed research on health intervention lighting methods for children and adolescents' visual health, long-term care for the elderly and the disabled, severe illness, physical and mental healing for surgical patients, emotional support for pregnant women and other application scenarios. At the same time, facing the Antarctic extreme day and extreme night and the stress environment of visual deprivation, Professor Hao proposed the light restoration program with rhythm timing to promote the summer and winter expedition members' adaptation to the extreme environment and physical and mental health. The intervention technology has been proved to be effective through demonstration application.

3. Evaluation technology and control standard of lighting healthy quality and photobiological safety

With special characteristics and urban residential structure in China, the international general standard health lighting products in our country and urban landscape lighting system control has weak operation and implementation as the outstanding problems, Professor Hao based on the situation of our country to construct the built environment health illumination control system of evaluation indexes, with standard lead healthy lighting product development, achievements and application to guide the construction and control of urban nightscape light construction controls.



Juries' Comments

- Outstanding achievements in the field of medicine and optical health.
- Professor Hao has been engaged in the teaching, scientific research, and engineering practice of light and human health for a long time.
- Professor Luoxi Hao’s many years of research on lighting for health and medical applications made tremendous contributions in human well-being and promoted solid state lighting.
- Professor Luoxi Hao had a great contribution in the fundamental area of teaching, researching and publishing his knowledge and got patents from its research. She developed something new in science that is the active health intervention technology.
- Outstanding contribution to the application of SSL in new areas of architecture and design practice.
- Professor Hao’s work in Photobiology as per local conditions of the area is commendable.
- Tacking all the problems of Health lighting, Demo application, Control standard etc. are commendable. Achievements in urban nightscape are worth mentioning with standard evaluation indexes.

Global SSL Award of Industry Development
Outstanding Contribution

Mr. Nguyen Doan Thang

Biography

Mr. Nguyen Doan Thang, born in 1943, is an Electrical engineer and has a Bachelor of Laws.

Having started work at Rang Dong Light Source and Vacuum Flask Joint Stock Company since 1981, he is now the company's General Director and Director of the Lighting Research and Development Centre.

Mr. Thang is also the Permanent Vice Chairman of the Vietnam Lighting Association (VLA), Chairman of the Vietnam Energy Conservation & Efficiency in Lighting Association (VECEL); Standing member of the Hanoi Union of Science and Technology Association; Standing member of the Vietnam Automation Association (VAA) and Member of the Management Council of the Investment Fund Start up and Creation (BK-Fund), Hanoi University of Science and Technology.

Previously he was a member of the National Foundation for Science and Technology Development (NAFOSTED) from 2014 to 2018.

During more than 40 years of working, he has made important contributions to developing the lighting technology, aiming for 'High Efficiency, Energy Saving and Environment Protection' in Vietnam in general, and advancing the successful transformation of Rang Dong's lighting in particular. The company has gone from production of traditional lighting with incandescent lapms and discharge lamps to applying new lighting technologies, namely solid lighting (known as SSL-LED in the 21st century lighting) and currently the I-4.0 LED lighting system and solutions (Smart Home, Smart City, Smart Farm).

In 2017, he compiled a report entitled "Proposal on the Roadmap for the Development of LED lighting industry to 2025" as part of the "Development and Promotion of LED technology for general lighting in Vietnam" project run by the Centre for High Technology Development – Vietnam Academy of Science and Technology (VAST). The report received all-round appreciation, contributing to the master plan for Vietnam's LED lighting development.

With a prestigious reputation in the country's lighting industry, Mr. Thang is an active promoter for multi- and inter-sectoral collaborations and linkages both at home and abroad. He has also established relationships with more than 45 Vietnamese and international organizations such as the International Solid State Lighting Alliance (ISA), Vietnam Lighting Association (VLA), Vietnam Energy Association (VEA), Vietnam Automation Association (VAA) as well as leading research institutes and universities in Vietnam.

Outstanding Contribution Brief

1. Promoting the development of lighting technology with "High Efficiency, Energy Saving and Environment Protection" in Vietnam by hosting and coordinating the implementation of domestic and international scientific and technological projects and topics:

In the 2000 - 2020 period, Mr. Thang hosted and coordinated the implementation of more than 20 national and international topics/projects. Most of them have received appreciation by ministries, sectors, and agencies. The notable projects include:

(1) "Vietnam Energy Efficiency Public Lighting (VEEPL) funded by the Vietnam Academy of Science and Technology (VAST), Global Environment Facility Trust Fund (GEF) and the World Bank (August 2006 - 2010).

(2) "Research and innovation in technology for manufacturing high-quality compact fluorescent lamps with a 10,000-hour lifespan" - Ministry of Science and Technology of Vietnam (Innovation Partnership Programme - IPP) (2012 - 2013)

(3) "Research, design and manufacture specialised lighting systems and build processes for using specialised lighting systems in the propagation and flowering control industry of some crops on an industrial scale" - Ministry of Science and Technology of Vietnam (December 2013 - August 2016);

(4) "Innovation/creativity to improve production capacity and develop distribution system of energy-saving, environmentally friendly LED technology lighting products towards low-income people" - Vietnam Business Challenge Fund (VBCF), funded by UK Aid and managed by SNV (January 2014 – December 2015);

(5) "Research and apply LED lights for seine fishing combined with lighting for offshore fishing" - Vietnam Academy of Science and Technology (VAST) (October 2015 – April 2017);

(6) "Research and develop technology to produce, test and commercialise LED products used in high-tech agricultural artificial lighting in Vietnam's market" – World Bank and Ministry of Science and Technology of Vietnam (November 2016 – June 2019);

(7) "Development and promotion of LED technology for General Lighting in Vietnam" - United Nations Development Programme (UNDP)/ Global Environment Facility Trust Fund (GEF) and Vietnam Academy of Science and Technology (VAST) (2016 – 2018).

VBCF Project Closing Meeting

VBCF Project Closing Meeting

2. Promoting strongly the research and application of science and technology in the production process to create products with high added value.

In 2011, the Lighting R&D Centre was established, becoming the first interdisciplinary and specialised centre in Vietnam's lighting industry. The facility gathers leading Vietnamese and foreign researchers and experts in many fields such as electronics, optics, mechanics, materials, chemistry, biology, agronomy, etc. The centre has since become the venue to gather research results, receive knowledge, and transfer scientific and technological knowledge in accordance with actual production conditions, as well as creating products with high added value, suitable for Vietnam's context.

Notable results include:

(1) Mastering technology and successfully manufacturing 03 lighting systems using specialised compact fluorescent lamps in tissue culture of some crops, in chrysanthemum and dragon fruit production areas.

(2) Successful research and production of 08 types of LED lights in 06 specialised fields in high-tech agriculture and fisheries, which are suitable to Vietnam's agricultural conditions. Of which, 3 products are recognised as technical advances, including: LED.TL-T6- WFR/9W that controls dragon fruit flowering; Specialised LED lighting system for seine fishing combined with floating fishing light in offshore waters; LED system for fishing nets.

It brings high economic efficiency to people and society: i.e. energy saving (50%-80% compared to using traditional incandescent and fluorescent lamps), longer lifespan, and more convenient installation. In addition, the productivity and quality of crops, fruits, and fishing have been improved. Hence, productivity and added values for farmers and fishermen are achieved.

3. Promoting innovation, completing and developing the 4.0 product/service ecosystem

The establishment of LED Ecosystem 4.0 Development Centre, the New Idea Creation Centre and a Venture Capital Fund has laid the foundation for developing the "LED ecosystem 4.0" product, contributing to turning Rang Dong into a pioneering enterprise. It provides comprehensive and synchronous solutions based on core technologies of lighting and IoT, thus assisting the creation of smart homes, smart cities, high-tech agriculture, and precision agriculture in Vietnam.

Rang Dong's 4.0 product/service ecosystem takes the core technology of Lighting and IoT with 4 attributes: (i) intelligent; (ii) personalisation; (iii) platformisation and creation of data services; and (iv) co-creating, jointly

adding value with customers and partners in the open business ecosystem.

Rang Dong's lighting solutions products have received the following awards:

(1) The 2nd generation Rallismart Smart Home solution (Smart Home) won the "Vietnam Smart City 2020" Award.

(2) Smart City solution (providing smart lighting for streets and landscape architecture) won the "Vietnam Smart City 2021" Award.

(3) Smart Farm solution (involving high-tech agricultural lighting, precision agriculture and renewable energy) won the Sao Khue Award in 2021 (excellent level).

4. Enabling interdisciplinary connection, knowledge spreading, and international cooperation to promote the development of the lighting industry

Establishing relationships, linking of supply chains, production, and distribution in the value chain, in order to solve multi-disciplinary and interdisciplinary problems of many specialised science and technology industries with more than 45 Vietnamese and international organisations.

(1) Building a model to link scientists with businesses. New scientific and technological research results are applied and transferred to businesses for making useful products for people and end-users. Organising a number of seminars and conferences for sharing experience, including: Scientific seminar "Turning knowledge into a driving force for sustainable development" hosted by the Foreign Trade University, the Tia Sang magazine and the Party Committee of Hanoi's Enterprise Sector, Rang Dong coordinated. Workshop on "Innovation/creativity of enterprises – A case study of cooperation between institutes/universities and Rang Dong" hosted by Ministry of Science and Technology of Vietnam.

The conference "Power-saving of LED technology - Product of the future" was hosted by Rang Dong Light Source & Vacuum Flask Joint Stock Company (Rang Dong) in collaboration with the HCMC Department of Standards Metrology and Quality, Energy Conservation Centre (May 2013). Representatives of ministries, branches of Science and Technology, agencies, scientists, and business managers who participated in the conference were introduced the cutting-edge and advantages of LED lighting products. They discussed about LED lighting products, and difficulties and barriers of the current mass use of LED products in Vietnam. Having a speech at the conference, Mr. Nguyen Doan Thang – Rang Dong's General Director presented solutions that Rang Dong implemented to develop high-quality LED lighting products, and the results of the application of Rang Dong's LED lighting solutions in several projects that has brought high efficiency outcomes. The issues were discussed and experiences in practical application implementation had contributed to promoting the development and application of LED lighting technology in Vietnam in the future.

Speech at the 2015 Vietnam National Lighting Technology Conference

(2) At the 2015 National Conference on Lighting Science and Technology of “The status and prospects of LED lighting in the strategy of energy saving, environmental protection and sustainable development in Vietnam”, Mr. Nguyen Doan Thang presented a number of issues about the development of LED lighting in Vietnam. He also shared Rang Dong's experiences and practices in managing and ensuring the quality of LED products as well as introduced high quality, diversified, synchronous LED products at reasonable prices that had matched the market demands.

Project "Local Development and Promotion of LED Technology for Advanced General Lighting in Vietnam"

Besides, many seminars on scientific and technological applications, technical advances have been organized. Promoting international cooperation in the field of solid lighting:

As a member of the International Solid State Lighting Alliance (ISA), the 13th ISA Technical Committee on Standardization (TCS) was held in Hanoi in July 2018 with the participation of ISA TCS members, representatives from the The Directorate for Standards, Metrology and Quality of Viet Nam (STAMEQ), the Vietnam Standard and Quality Institute (VSQI), the Vietnam Lighting Association (VLA), and other associations, etc.

Organising seminars on LED health lighting and classroom lighting, seminars on LED lighting for agriculture, seminars on Smart City and Smart Lighting, etc. to introduced the latest research and development achievements, technology and application progress, and enhance the cooperation between ISA and Vietnamese associations and departments.

ISA TCS 13 meeting in Hanoi, Vietnam

Juries' Comments

- Developed high value-added products in line with Vietnam's national conditions.
- He compiled a report entitled “Proposal on the Roadmap for the Development of LED lighting industry to 2025” as part of the “Development and Promotion of LED technology for general lighting in Vietnam”.
- Mr. Thang’s decades’ of work for high efficiency, energy saving and environment protection made tremendous contributions in promotion of SSL in Vietnam.
- Mr. Nguyen Doan Thang contributed strongly to energy saving and environment protection supporting the LED technology, promoted research in the lighting field and developed the research with the Lighting R&D Centre contributing to the knowledge advance in the country.
- Outstanding contribution to the acceptance of SSL in an emerging economy at both policy and practical levels.
- Mr. Thang’s research and application in the production process is valuable. His support in educating people in international cooperations worth mentioning.

Global SSL Award of Industry Development
Outstanding Contribution

Madam Ruimei LIN

Biography

Ruimei Lin, born in 1966, native place of Putian, graduated from Nanjing Institute of technology in 1987, majoring in semiconductor physics and devices. She was a senior engineer with a bachelor's degree. In 2004,she enrolled in the MBA program of the school of management of Xiamen University；Participated in Tsinghua president class in 2011；In 2013, she participated in the president training class of Peking University；In 2019, she participated in the leading talent training program of capital market college Tsinghua School of economics and management for listed companies.

From 1987 to1988, she worked in Xiamen semiconductor factory as a engineer; From 1988 to1994, she worked in Hualian electronics, responsible for technique and R&D. Since 1994, she has worked in Xiamen Guangpu Electronics Co., Ltd. and successively served as the chief engineer and deputy general manager. She is now the chairman and the executive director of the national semiconductor lighting engineering research and development and Industry Alliance,.Besides,she is the vice chairman of the education equipment professional committee of China Quality Promotion Association and the ultraviolet LED professional committee of the national semiconductor lighting engineering research and development and Industry Alliance.She is member of semiconductor Standardization Working Committee of the Ministry of industry and information technology of the people's Republic of China, and member of Fujian semiconductor light emitting device (LED) Application Product Standardization Technical Committee.

Outstanding Contribution Brief

1. From a female engineer to a female president, led Guangpu to start a business and enter China's optoelectronic head enterprise.

At the end of 1994, when Guangpu Electronics was founded, there were only three people, starting from the production of infrared integrated remote control receiving circuit business. After the After the lessons of the financial crisis in 1998, she repositioned the market, set a higher customer threshold, and confirmed the "value-customer-centric development concept", which made Guangpu an excellent supplier of the world's top five

display manufacturers, including TPV, Foxconn and LG. In 2011, taking the lead in developing LED flat-panel lamps with the same core technology as LED backlight. This product was rated as "national key new product" in 2012, and has successfully established strategic cooperation with international famous customers in the lighting industry since 2013. On January 24, 2014, Guangpu electronics landed on “the New Third Board”. On April 6, 2017, it was successfully listed on Shenzhen Stock Exchange.


国 家 重 点 新 产 品
证 书
项目名称： 高光效高均匀度LED面板灯
项目编号： 2012GRO41019
承担单位： 厦门光莆显示技术有限公司
发证时间： 二〇一二年五月
有 效 期： 三年
批准机关： 科学技术部

National Key New Product Certificate

Gem Listing

Under the leadership of Ruimei Lin, Guangpu has accumulated core technologies such as semiconductor sensing technology, semiconductor optical technology, flexible material technology, IOT communication technology and AIOT algorithm technology after nearly three decades of development. It has established Industrialization Bases and total eight R&D in the United States, Singapore, Malaysia, China and other places. With a plant area of more than 250000 square meters and customers in more than 50 countries and regions around the world, it has made due contributions to the development of the global semiconductor lighting industry.

2. Create light health series products to serve the urgent needs of the society

According to the social development trend and the needs of coping with the COVID-19, Ruimei Lin led Guangpu into the new field of light health, and through exploration and innovation, Guangpu entered a new stage of sustainable development.

There have developed a series of UV disinfection products and soon applied them in places where society urgently needs. Disinfection and sterilization products such as cold chain logistics series, Bus elevator series, robot series, temperature measurement series, air disinfector series and nucleic acid collection workstation are constantly being updated and iterated.

Guangpu's "overall solution of public epidemic prevention system based on internet of things technology" has

been included in the 2021 Internet of things demonstration project of China Ministry of industry and information Technology. On April 6,2022, Guangpu was successfully selected as the official disinfection and sterilization product and service supplier of the 19th Asian Games and the 4th Asian Paralympic Games.

Official Supplier of Disinfection & Sterilization Products and Services for the 19th Asian Games Hangzhou 2022

In order to serve the next generation and improve the light environment of campus classrooms, Guangpu takes 6 × The lighting layout scheme is designed with a size of 9m. By designing the conventional horizontal lighting layout as the longitudinal lighting layout, the lighting index of the whole classroom is better than the national standard, and the visual lighting environment is greatly improved. As long as equipped with Guangpu LED professional classroom light and LED professional blackboard light, students' eyesight can be fully protected. Guangpu UV air disinfector is equipped in the classroom to create a clean classroom learning environment for students.

In response to the challenge of social aging, the company developed "smart health elderly care cloud service platform" and "smart health elderly care" series products to carry out "smart" transformation of existing elderly care institutions for aging at home. By installing network connection equipment, emergency call equipment, positioning equipment, vital signs monitoring equipment, video intercom equipment, intelligent mattresses, health bracelets, home portable health collection equipment, intelligent medicine boxes and other intelligent equipment, there can provide comprehensive and multi perspective intelligent monitoring for the elderly at home. The system and its series of products have been widely used in elderly care institutions, elderly care communities, home-based elderly care, medical and elderly care integration, elderly care real estate and other fields in 46 cities of 28 provinces including Beijing, Shanghai, Guangdong, Jiangsu, etc.

3. Adhere to scientific and technological innovation, deeply cultivate semiconductor optical application technology, and promote the development of the industry

Ruimei Lin has insisted that R&D is the foundation of an enterprise for many years. She has been closely following the latest developments in industrial development, constantly studying new technologies and contributing to the development of industrial technical norms:

(1) There are 14 utility model patents for personal service invention.

(2) She has successively presided over the implementation of many national industrialization projects, such as electronic ultra-thin high luminous efficiency and low resistance surface mount LED, chip ultra bright pure white semiconductor light-emitting lamp, high luminous efficiency and high uniformity LED panel lamp, and indoor semiconductor lighting devices, electric light source products and testing technology research and development and Application.

(3) Actively participated in the drafting of more than ten industrial standards and provincial and local standard documents,such as《Infrared remote control receiving amplifier》,《Closed specification for base plate COB led》,《Technical specification for LED flat panel lamps for indoor lighting》,《Technical specification for LED plant growth lamp》,《Specification classification of UVC LED chip for disinfection》,《Safety operation procedures for UVC led disinfection products》,《Code for acceptance of UV LED disinfection system in public places》and etc.

(4) The key technology and industrialization of high luminous efficiency and long-life semiconductor lighting led by the technical team won the first prize of the national scientific and technological progress award in 2019. Guangpu is the first private enterprise in China's semiconductor optical application industry to win this honor.

First Prize of National Scientific and Technological Progress

The company has reserved more than 200 authorized patents, forming a patent protection wall. More than 500 products have passed CQC, CE, UL, FCC and other international certifications.

4. Practice social responsibility and highlight the responsibility of enterprises

In order to undertake the social responsibility of enterprises to the society, Guangpu has formulated the "bright plan for education", "charity sunshine plan for the elderly", "anti epidemic spark plan" and other public welfare programs in the past few decades. We will continue to support public welfare undertakings such as education, medical care, elderly care and anti epidemic.

(1) Donated educational lighting products to help rebuild local campuses when floods occurred in Henan.

(2) Educational lighting fixtures and air disinfectors were donated to Hengshui middle school and Dechuan middle school to create a comfortable and safe learning environment for students.

(3) When the covid-19 epidemic broke out in Hubei, Putian, Xiamen and other places, Guangpu donated anti epidemic materials to help the local fight against the epidemic. Guangpu donated UV disinfection and sterilization products to Hubei, Fujian, Hebei, Tong'an and other places in a "point-to-point" precise donation method. In 2020, Guangpu was awarded the "outstanding contribution award for covid-19 epidemic prevention and control" by Hubei Charity Federation. After learning that there is a shortage of blood for clinical use, Guangpu calls on and organizes employees to donate blood for public welfare to send love and hope to patients.

Outstanding Contribution Award for COVID-19 Epidemic Prevention and Control

Juries' Comments

- Light health series products serve the social need.
- She is now the executive director of the national semiconductor lighting engineering research and development and Industry Alliance. Besides, she is the vice chairman of the education equipment professional committee of China Quality Promotion Association.
- Ms. Ruimei Lin's leadership in the optical semiconductor industry in developing numerous new technologies for LED lighting products is worth high recognition.
- Madam Ruimei Lin made a very good career as executive director of the national semiconductor lighting engineering research and development and Industry Alliance, contributed as a leading talent for many.
- Outstanding contribution to the development of SSL through academic and technical and leadership in the acceptance of SSL.
- Ms. Lin is a high achiever in social responsibility work by providing lighting solutions. Her contribution during covid19 is commendable.

Global SSL Award of Industry Development Outstanding Contribution

2022 IDOC Jury Panel

Evgeny Dolin

Past Director General of LED and LED-based Systems Manufacturer's Non-profit Partnership (NPRPSS) of Russia

Guoqi Zhang

Professor of Delft University of Technology

Co-Chair of ISA Board of Advisors

Isac Roizenblatt

Technical Director of the Brazilian Association of the Lighting Industry (ABILUX)

Member of ISA Board of Advisors

Ling Wu

President of China Advanced Semiconductor Industry Innovation Alliance (CASA)

Member of ISA Council of Management

Norman Bardsley

CEO of Bardsley Consulting

Chief Analyst of ISA

Shyam Sujan

Secretary General of the Electric Lamp and Component Manufacturers Association of India (ELCOMA)

Member of ISA Council of Management

Warren Julian

Emeritus Professor, University of Sydney

Past President of Illuminating Engineering Society of Australia and New Zealand (IESANZ)

Member of ISA Council of Management

Yoshi Ohno

PhD., NIST Fellow, National Institute of Standards and Technology, USA

Past president of CIE

Member of ISA Board of Advisors

Chairman of ISA TCS