

Japan OLED Forum Prospectus

The research and development of organic light-emitting diodes (OLEDs) has progressed rapidly since the latter half of the 1980's and has led to their use in practical applications. Producing surface light emission when a high current is passed through an organic thin film, OLEDs have opened new opportunities in science and technology unlike anything seen before them. Once this emerging field is established as a highly versatile technology, it will not stop at bringing the world new, highly efficient displays but is also expected to become the foundation for constructing new electronics based on organic semiconductors. With high expectations matching the innovativeness of the underlying technology, now is the time to establish an industry that puts to use the results of OLED research and development, and the competition to make OLEDs practical is happening in parallel with basic research and development throughout the world and particularly intensely in Asia.

The researchers and engineers who are studying and developing OLEDs cover a broad variety of fields including organic chemistry, polymer chemistry, materials engineering, interface science, solid state physics, device physics, and electrical and electronics engineering. The related industries include not only the electronics industry but also chemical, materials production, and applied optics industries. Thus, a broad range of fundamental science and technologies must be combined and merged in new ways to form a new area that captures what individual specialized fields in science, technology, and industry cannot.

The question then becomes, "Can the current state of OLED research and development in Japan rise up to such high expectations and bring about steady progress?" Indeed, it was Japanese engineers who pioneered the practical use of OLEDs in the latter half of the '90s, who first demonstrated the possibility of a full-color display, and who proved that high-performance televisions were possible. However, as of 2005, Japan's top position in OLED product sales and state-of-the-art exhibitions at international conferences such as SID has been given up to other Asian countries. If this continues, Japan will fall behind other Asian nations in OLED manufacturing technology, and a time will come—in due course—when the world will no longer need Japan for the basic science and technology that supports OLED manufacturing.

To break through in such a critical situation, the sparkle in the eyes of young Japanese researchers and engineers conducting OLED research and development must be revived. Only through the diligent presentation and debate of the fundamental science underlying OLEDs and through the exchange and passionate discussion of technological developments for realizing high-value products will researchers' and engineers' abilities improve and great technological advances made. Reflecting on whether the discussion until now has truly been an all-out effort that went past concerns over lifetime issues, we must take care not to allow researchers and engineers to fixate on individual, narrow interests and halt Japan's technical advancement.

To continuously maintain the highest level of OLED research and development in Japan, the interest and enthusiasm of the researchers and engineers actually responsible for the development must be bolstered while at the same time gaining the attention and recognition of business administrators and research leadership. Importantly, researchers and engineers in industry and academia must mutually share a strong awareness of OLED research and development and establish the conditions to push forward research and development through the will to participate in the creation of a new industry that affects the future of Japan.

From this viewpoint, we recognize the need to unite academic research and practical technological development in a way that overcomes the status quo, and we hereby propose the establishment of the Japan OLED Forum by volunteers from academia and industry. This Forum is not for the display of only results that look nice. Rather, this Forum is for the discussion of real problems, which often defy nice and simple explanations, encountered by the participants during actual research. Participants who share in the chaotic debate of each Forum will return to their respective research groups to work on original research going in new directions and realize their own unique developments.

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Founders: Tetsuo Tsutsui, Chihaya Adachi, Hisao Ishii, Nobuki Ibaraki, Testuo Urabe, Toshihiro Onishi, Yu Okada, Toshihide Kamata, Tadashi Kusumoto, Katsumi Kondo, Fumiaki Sato, Teruo Tohma, Shizuo Tokita, Hitoshi Nakada, Reiji Hattori, Kazunobu Mameno, Akiyoshi Mikami, Satoru Miyashita, Hideyuki Murata