

# Optical Patterning in Organic EL Devices

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## **Abstract**

Fabrication of micropatterned multicolor organic electroluminescent (EL) devices by the "photobleaching method" is described. In this approach, we take advantage of the instability of organic fluorescent molecules upon photooxidation; that is, organic molecules can be oxidized or bleached by exposure to light in the presence of oxygen. Several types of multicolor devices having a dye-dispersed polymer emitter layer were fabricated. In order to tune the emission color and pattern the device, the polymer emitter layer is exposed to ultraviolet light or visible light after formed by spin coating so that specific dyes are photooxidized and become non-emissive. Due to this photobleaching process, the light-exposed area have different emission colors from the non-exposed area, and, using a fine-patterned photomask, micropatterned multicolor EL devices were successfully fabricated. This

photobleaching method is the simplest method for the fabrication of multicolor polymer EL devices and can be applicable to the fabrication of full color displays having arrays of red-green-blue pixels.

## **Biography**

Junji Kido received the B.S. degree in applied chemistry from Waseda University, Tokyo, Japan, in 1984 and the M.S. and Ph. D. degrees in polymer chemistry from Polytechnic University, New York, in 1987 and 1989, respectively.

In 1989, he joined department of polymer chemistry in Yamagata University in Japan as an assistant professor and promoted to an associate professor in 1995. From 1996, he moved to the graduate school of engineering in Yamagata University. His current research activities are focused on organic electroluminescence materials and devices.