UNIVERSAL DISPLAY CORP \PA\
Form 10-K
March 12, 2009

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

FORM 10-K

(Mark One)

[X] ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

For the fiscal year ended December 31, 2008

OR

[ ] TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

For the transition period from _____ to _____

Commission File Number 1-12031

UNIVERSAL DISPLAY CORPORATION
(Exact name of registrant as specified in its charter)

Pennsylvania	23-2372688
(State or other jurisdiction of incorporation or organization)	(I.R.S. Employer Identification No.)
375 Phillips Boulevard, Ewing, New Jersey	08618
(Address of principal executive offices)	(Zip Code)

Registrant's telephone number, including area code: (609) 671-0980

Securities registered pursuant to Section 12(b) of the Act:

Title of Each Class	Name of Each Exchange on Which Registered
Common Stock, $0.01 par value	The NASDAQ Stock Market LLC

Securities registered pursuant to Section 12(g) of the Act: None

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes No X

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act. Yes No X

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was

required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes X No

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K is not contained herein, and will not be contained, to the best of registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K.

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, or a smaller reporting company. See the definitions of "large accelerated filer," "accelerated filer" and "smaller reporting company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer		Accelerated filer X
Non-accelerated filer	(Do not check if a smaller reporting company)	Smaller reporting company

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act). Yes No X

The aggregate market value of the voting and non-voting common equity held by non-affiliates of the registrant computed by reference to the closing sale price of the registrant's common stock on the NASDAQ Global Market as of June 30, 2008, was $378,647,340. Solely for purposes of this calculation, all executive officers and directors of the registrant and all beneficial owners of more than 10% of the registrant's common stock (and their affiliates) were considered affiliates.

As of March 9, 2009, the registrant had outstanding 36,308,821 shares of common stock.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the registrant's Proxy Statement for the 2009 Annual Meeting of Shareholders, which is to be filed with the Securities and Exchange Commission no later than April 30, 2009, are incorporated by reference into Part III of this report.

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CAUTIONARY STATEMENT
CONCERNING FORWARD-LOOKING STATEMENTS

This report and the documents incorporated by reference in this report contain some "forward-looking statements." Forward-looking statements concern possible or assumed future events, results and business outcomes. These statements often include words such as "believe," "expect," "anticipate," "intend," "plan," "estimate," "seek," "will," "may" expressions. These statements are based on assumptions that we have made in light of our experience in the industry, as well as our perceptions of historical trends, current conditions, expected future developments and other factors we believe are appropriate under the circumstances.

As you read and consider this report, you should not place undue reliance on any forward-looking statements. You should understand that these statements involve substantial risk and uncertainty and are not guarantees of future performance or results. They depend on many factors that are discussed further under Item 1A below (Risk Factors), including:

- the outcomes of our ongoing and future research and development activities, and those of others, relating to organic light emitting diode (OLED) technologies and materials;
- our ability to access future OLED technology developments of our academic and commercial research partners;
- the potential commercial applications of and future demand for our OLED technologies and materials, and of OLED products in general;
- our ability to form and continue strategic relationships with manufacturers of OLED products;
- successful commercialization of products incorporating our OLED technologies and materials by OLED manufacturers, and their continued willingness to utilize our OLED technologies and materials;
- the comparative advantages and disadvantages of our OLED technologies and materials versus competing technologies and materials currently on the market;
- the nature and potential advantages of any competing technologies that may be developed in the future;
- our ability to compete against third parties with resources greater than ours;
- our ability to maintain and improve our competitive position following the expiration of our fundamental OLED patents;
- the adequacy of protections afforded to us by the patents that we own or license and the cost to us of maintaining and enforcing those patents;
- our ability to obtain, expand and maintain patent protection in the future, and to protect our unpatentable intellectual property;

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our exposure to and ability to withstand third-party claims and challenges to our patents and other intellectual property rights;

- the payments that we expect to receive under our existing contracts with OLED manufacturers and the terms of contracts that we expect to enter into with OLED manufacturers in the future;

- our future capital requirements and our ability to obtain additional financing if and when needed;

- our future OLED technology licensing and OLED material revenues and results of operations; and

- general economic and market conditions.

Changes or developments in any of these areas could affect our financial results or results of operations, and could cause actual results to differ materially from those contemplated by any forward-looking statements.

All forward-looking statements speak only as of the date of this report or the documents incorporated by reference, as the case may be. We do not undertake any duty to update any of these forward-looking statements to reflect events or circumstances after the date of this report, or to reflect the occurrence of unanticipated events.

PART I

ITEM 1. BUSINESS

Our Company

We are a leader in the research, development and commercialization of organic light emitting diode, or OLED, technologies and materials. OLEDs are thin, lightweight and power-efficient solid-state devices that emit light, making them highly suitable for use in full-color displays and as lighting products. We believe that OLED displays have begun to capture a share of the growing flat panel display market because they offer potential advantages over competing display technologies with respect to brightness, power efficiency, viewing angle, video response time and manufacturing cost. We also believe that OLED lighting products have the potential to replace many existing light sources in the future because of their high efficiency, excellent color rendering index, low heat generation and novel form factors. Our technology leadership and intellectual property position should enable us to share in the revenues from OLED displays and lighting products as they enter mainstream consumer markets.

Our primary business strategy is to further develop and license our proprietary OLED technologies to manufacturers of products for display applications, such as cell phones, MP3 players, laptop computers and televisions, and specialty and general lighting products. In support of this objective, we also develop new OLED materials and sell materials to those product manufacturers. Through our internal research and development efforts and our relationships with world-class partners such as Princeton University, the University of Southern California, the University of Michigan, Motorola, Inc. and PPG Industries, Inc., we have established a significant portfolio of proprietary OLED technologies and materials. We currently own, exclusively license or have the sole right to sublicense more than 940 patents issued and pending worldwide.

In 2008, we continued selling our proprietary OLED materials to customers for evaluation and use in commercial OLED products. A substantial portion of our OLED material sales in 2008 were to Samsung SDI Co., Ltd. of South Korea, whose OLED business was transferred to Samsung Mobile Display Co., Ltd. (Samsung SMD) in September 2008. We also sold commercial OLED chemicals in 2008 to Chi Mei EL Corporation of Taiwan and Tohoku Pioneer Corporation of Japan, and in November 2008 we renewed our commercial supply agreement with LG Display Co., Ltd. of South Korea.

We received royalties under our patent license agreement with Samsung SMD on account of its sales of active matrix OLED display products throughout 2008. In August 2008, we entered into our first patent license agreement for OLED lighting products with Konica Minolta Holdings, Inc. and its subsidiary. We also entered into license and material supply agreements with Kyocera Corporation in July 2008, although we are waiting for Kyocera to notify us that these agreements are to become effective. We continue to work with many other companies who are evaluating our OLED technologies and materials for possible use in commercial OLED display and lighting products, including Sony Corporation and Seiko Epson Corporation.

Market Overview

The Flat Panel Display Market

Flat panel displays are essential for a wide variety of portable consumer electronics products, such as cell phones, MP3 players, digital cameras and laptop computers. Due to their narrow profile and light weight, flat panel displays have also become the display of choice for larger product applications, such as desktop computer monitors and televisions.

Liquid crystal displays, or LCDs, currently dominate the flat panel display market. However, we believe that OLED displays are an attractive alternative to LCDs because they offer a number of potential advantages, including:

- a thinner profile and lighter weight;
- higher brightness and contrast ratios, leading to sharper picture images and graphics;
- wider viewing angles;
- faster response times for video;

·higher operating efficiencies, thereby reducing energy consumption; and

·lower cost manufacturing methods and materials.

Based on these characteristics, product manufacturers are starting to adopt small-area OLED displays for use in portable electronic devices, such as cell phones and MP3 players. These manufacturers are also working to develop OLED displays for use in larger applications, such as computer monitors and televisions. We believe that if these efforts are successful, they could result in sizeable markets for OLED displays.

In addition, due to the inherent transparency of organic materials and through the use of transparent electrode technology, OLEDs eventually may enable the production of transparent displays for use in products such as automotive windshields and windows with embedded displays. Organic materials also make technically possible the development of flexible displays for use in an entirely new set of product applications, such as display devices that can be conformed to certain shapes or even rolled up for storage.

The Solid-State Lighting Market

Traditional incandescent light bulbs are inefficient because they convert only about 5% of the energy they consume into visible light, with the rest emerging as heat. Fluorescent lamps use excited gases, or plasmas, to achieve a higher energy conversion efficiency of about 20%. However, the color rendering index, or CRI, of most fluorescent lamps – how good their color is compared to an ideal light source – is inferior to that of an incandescent bulb. Fluorescent lamps also pose environmental concerns because they contain mercury.

Solid-state lighting relies on the direct conversion of electricity to visible white light using semiconductor materials. By avoiding the heat and plasma-producing processes of incandescent bulbs and fluorescent lamps, solid-state lighting products can have substantially higher energy conversion efficiencies, which in theory could approach 100%.

There are currently two basic types of solid-state lighting devices: inorganic light emitting diodes, or LEDs, and OLEDs. Current LEDs are very small in size (about one square millimeter) and are extremely bright. Having been developed about 25 years before OLEDs, they are already employed in various specialty lighting products, such as traffic lights, billboards, replacements for neon lighting and as border or accent lighting. However, their intense brightness and high operating temperatures may make them less desirable for general illumination and diffuse lighting applications.

OLEDs, on the other hand, are larger in size and can be viewed directly, without using diffusers that are required to temper the intense brightness of LEDs. OLEDs can be built on any suitable surface, including glass, plastic or metal foil, and could be cost-effective to manufacture in high volume. Given these characteristics, product manufacturers are working to develop OLEDs for diffuse specialty lighting applications and ultimately general illumination. If these efforts are successful, we believe that OLED lighting products could begin to be used for applications currently addressed by incandescent bulbs and fluorescent lamps.

Our Competitive Strengths

We believe our position as one of the leading technology developers in the OLED industry is the direct result of our technological innovation. We have built an extensive intellectual property portfolio around our OLED technologies and materials, and are working diligently to enable our manufacturing partners to adopt our OLED technologies and materials for commercial usage. Our key competitive strengths include:

Technology Leadership. We are a recognized technology leader in the OLED industry. We and our research partners pioneered the development of our UniversalPHOLED™ phosphorescent OLED technologies, which can be used to produce OLEDs that are up to four times as efficient as traditional fluorescent OLEDs and significantly more efficient than current backlit LCDs. We believe that our PHOLED technologies are well-suited for industry usage in the commercial production of OLED displays and lighting products. Through our relationships with companies such as PPG Industries and our academic partners, we have also developed other important OLED technologies, as well as novel OLED materials that we believe will facilitate the adoption of our various OLED technologies by product manufacturers.

Relationships with Leading Product Manufacturers. We have established relationships with well-known manufacturers that are using, or are evaluating, our OLED technologies and materials for use in commercial products. In

2008, Samsung SMD, Chi Mei EL and Tohoku Pioneer purchased our proprietary OLED materials for use in commercial OLED display products, and we renewed our commercial material supply agreement with LG Display. We also entered into a license agreement with Konica Minolta for its manufacture of OLED lighting products, and license and material supply agreements with Kyocera for its manufacture of active matrix OLED display products. In 2005, we entered into a license agreement with Samsung SMD for its manufacture of active matrix OLED display products, and in 2002 we entered into a cross-license agreement with DuPont Displays, Inc. for its manufacture of solution-processed OLED display products. We also licensed one of our ink-jet printing patents and certain related patent filings to Seiko Epson in 2006. We continue to work with many product manufacturers who are evaluating our OLED technologies and materials for use in commercial OLED displays and lighting products, including Sony and Seiko Epson.

Broad Portfolio of Intellectual Property. We believe that our extensive portfolio of patents, trade secrets and know-how provides us with a competitive advantage in the OLED industry. Through our internal development efforts and our relationships with world-class partners such as Princeton University, the University of Southern California, the University of Michigan, Motorola and PPG Industries, we own, exclusively license or have the sole right to sublicense more than 940 patents issued and pending worldwide. We also continue to accumulate valuable trade secret information and technical know-how relating to our OLED technologies and materials.

Focus on Licensing Our OLED Technologies. We are focused on licensing our proprietary OLED technologies to product manufacturers on a non-exclusive basis. Our current business model does not involve the direct manufacture or sale of OLED display or lighting products. Instead, we seek license fees and royalties from OLED product manufacturers based on their sales of licensed products. We believe this business model allows us to concentrate on our core strengths of technology development and innovation, while at the same time providing significant operating leverage. We also believe that this approach may reduce potential competitive conflicts between us and our customers.

Leading Supplier of PHOLED Emitter Materials. We are the leading supplier of phosphorescent emitter materials to OLED product manufacturers. PPG Industries currently manufactures our proprietary emitter materials for us, which we then qualify and resell to OLED product manufacturers. We record revenues based on our sales of these materials to OLED product manufacturers. This allows us to maintain close technical and business relationships with the OLED product manufacturers purchasing our proprietary materials, which in turn further supports our technology licensing business.

Established U.S. Government Contracts to Fund Research and Development. In 2008, we started or continued working under approximately 14 research and development contracts with U.S. government agencies, such as the U.S. Department of the Army and the U.S. Department of Energy. Under these contracts, the U.S. Government funds a portion of our efforts to develop next-generation OLED technologies for applications such as flexible displays and solid-state lighting. This enables us to supplement our internal research and development budget with additional funding.

Experienced Management and Scientific Advisory Team. Our management team has significant experience in developing business models focused on licensing disruptive technologies in high growth industries. In addition, our management team has assembled a Scientific Advisory Board that includes some of the leading researchers in the OLED industry, such as Professor Stephen R. Forrest of the University of Michigan (formerly of Princeton University) and Professor Mark E. Thompson of the University of Southern California.

Our Business Strategy

Our current business strategy is to both promote and continue to expand our portfolio of OLED technologies and materials for widespread use in OLED displays and lighting products, and to generate revenues by licensing our

OLED technologies and selling our proprietary OLED materials. We presently are focused on the following steps to implement our business strategy:

Target Leading Product Manufacturers. We are targeting leading manufacturers of flat panel displays and lighting products as potential commercial licensees of our OLED technologies and purchasers of our OLED materials. For example, in April 2005 we entered into a patent license agreement with Samsung SMD for its manufacture and sale of active-matrix OLED display products, and in August 2008 we entered into a license agreement with Konica Minolta for its manufacture and sale of OLED lighting products. In 2008, we also sold our proprietary phosphorescent OLED materials to Samsung SMD, Chi Mei EL and Tohoku Pioneer for use in commercial OLED display products. We also provide technical assistance and support to several manufacturers of displays and lighting products who are evaluating our OLED technologies and materials, or utilizing them in product development and/or for pre-commercial product manufacturing. We concentrate on

working closely with these manufacturers because we believe that the successful incorporation of our technologies and materials into commercial products is critical to their widespread adoption.

Enhance Our Existing Portfolio of PHOLED Technologies and Materials. We believe that a strong portfolio of proprietary OLED technologies and materials is critical to our success. Consequently, we are continually seeking to expand this portfolio through our internal development efforts, our collaborative relationships with academic and other research partners, and other strategic opportunities. One of our primary goals is to develop new and improved PHOLED technologies and materials with increased efficiencies, enhanced color gamut and extended lifetimes, which are compatible with different manufacturing methods, so that they can be used by various manufacturers in a broad array of OLED products.

Develop Next-Generation Organic Technologies. We continue to conduct research and development activities relating to next-generation OLED technologies. Our current research and development initiatives involve flexible OLED displays, transparent or top-emitting OLED displays, thin-film encapsulation for OLEDs and OLEDs for solid-state lighting. We also are funding research by our academic partners on the use of organic thin-film technology in other applications, such as organic lasers, organic TFTs and photodetectors. Our focus on next-generation technologies is designed to enable us to continue our position as a leading provider of OLED and other organic electronics technologies and materials as new markets emerge.

Business and Geographic Markets

We derive revenue from the following:

- technology research and development, including government contract work and collaborative R&D with third parties;
- intellectual property and technology licensing;
- sales of OLED materials for evaluation, development and commercial manufacturing; and
- technical assistance and support provided to third parties for commercialization of their OLED products.

Most manufacturers of flat panel displays and lighting products who are or might potentially be interested in our OLED technologies and materials are currently located in foreign countries, particularly the Asia-Pacific region. Consequently, we receive a substantial portion of our revenues from external customers that are domiciled outside of the United States, and our business is heavily dependent on our relationships with these customers. In particular, one customer located in the Asia-Pacific region, Samsung SMD, accounted for approximately 42% of our consolidated revenues for 2008. Substantially all revenue derived from these customers is denominated in U.S. dollars.

For more information on our revenues, costs and expenses associated with our business, as well as a breakdown of revenues from domestic and foreign sources, please see our audited Consolidated Financial Statements and the notes thereto, as well as “Management’s Discussion and Analysis of Financial Condition and Results of Operations,” included elsewhere in this report.

Our Phosphorescent OLED Technologies

Phosphorescent OLEDs utilize specialized materials and device structures that allow OLEDs to emit light through a process known as phosphorescence. Conversely, traditional fluorescent OLEDs emit light through an inherently less efficient process. Theory and experiment show that phosphorescent OLEDs exhibit device efficiencies up to four times higher than those exhibited by fluorescent OLEDs. Phosphorescence substantially reduces the power requirements of an OLED and is potentially useful for hand-held devices, such as mobile phones, where battery power is often a limiting factor. Phosphorescence is also important for large-area displays such as televisions, where higher device efficiency and lower heat generation may enable longer product lifetimes and increased energy efficiency.

We have a strong intellectual property portfolio surrounding our existing PHOLED phosphorescent OLED technologies and materials. We also conduct work to develop new and improved PHOLED technologies and materials, and to enhance our intellectual property position. In 2008, we announced further advances in the development of our proprietary PHOLED materials and device architectures. We also continued our commercial supply relationships with companies such

as Samsung SMD to use our PHOLED materials for their manufacture of OLED displays. In addition, we continued to work closely with customers evaluating and qualifying our proprietary PHOLED materials for commercial usage, and with other material suppliers to match our PHOLED emitters with their phosphorescent hosts and other OLED materials.

Our Additional Proprietary OLED Technologies

Our research, development and commercialization efforts also encompass a number of other OLED device and manufacturing technologies, including the following:

TOLED™ Transparent OLEDs. We have developed a technology for the fabrication of OLEDs that have transparent cathodes. Conventional OLEDs use a reflective metal cathode and a transparent anode. In contrast, TOLEDs use a transparent cathode and either a transparent, reflective or opaque metal anode. TOLEDs utilizing transparent cathodes and reflective metal anodes are known as “top-emission” OLEDs. In a “top-emission” active-matrix OLED, light is emitted without having to travel through much of the device electronics where a significant portion of the usable light is lost. This results in OLED displays having image qualities and lifetimes superior to those of conventional active-matrix OLEDs. TOLEDs utilizing transparent cathodes and transparent anodes may also be useful in novel flat panel display applications requiring semi-transparency or transparency, such as graphical displays in automotive windshields.

FOLED™ Flexible OLEDs. We are working on a number of technologies required for the fabrication of OLEDs on flexible substrates. Most OLED and other flat panel displays are built on rigid substrates such as glass. In contrast, FOLEDs are OLEDs built on non-rigid substrates such as plastic or metal foil. This enhances durability and enables conformation to certain shapes or repeated bending or flexing. Eventually, FOLEDs may be capable of being rolled into a cylinder, similar to a window shade. These features create the possibility of new flat panel display product applications that do not exist today, such as a portable, roll-up Internet connectivity and communications device. Manufacturers also may be able to produce FOLEDs using more efficient continuous, or roll-to-roll, processing methods. We currently are conducting research and development on FOLED technologies internally, under several of our U.S. government programs and in connection with the government-sponsored Flexible Display Center at Arizona State University.

OVPD™ Organic Vapor Phase Deposition. The standard approach for manufacturing a small molecule OLED, including a PHOLED, is based on a vacuum thermal evaporation, or VTE, process. With a VTE process, the thin layers of organic material in an OLED are deposited in a high-vacuum environment. An alternate approach for manufacturing a small molecule OLED is based on OVPD. In contrast to the VTE process, the OVPD process utilizes a carrier gas stream in a hot walled reactor in a low pressure environment to deposit the layers of organic material in an OLED. The OVPD process may offer advantages over the VTE process through more efficient materials utilization and enhanced deposition control. We have partnered with Aixtron AG, a leading manufacturer of metal-organic chemical vapor deposition equipment, to develop and qualify equipment for the fabrication of OLED displays utilizing the OVPD process.

UniversalP2OLED™ Printable Phosphorescent OLEDs. OLEDs can be manufactured using other processes as well. Another method involves preparing solutions of the various organic materials in an OLED that can be solution-processed by techniques such as spin coating or inkjet printing onto the substrate. Solution-processing methods, and inkjet printing in particular, have the potential to be lower cost approaches to OLED manufacturing and scalable to large area displays. Over the past several years, we have worked on P2OLEDs under Joint Development Agreements with Seiko Epson, and we have collaborated with other material manufacturers to develop and evaluate novel P2OLED materials. In May 2008, we announced continued advances in P2OLED material systems for ink-jet printing.

OVJP™ Organic Vapor Jet Printing. Our groundbreaking OVJP technology is another direct printing method for the manufacture of OLEDs. As a direct printing technique, OVJP technology has the potential to offer high deposition rates for any size or shaped OLED. In addition, OVJP technology avoids the OLED material wastage associated with use of a shadow mask (i.e., the waste of material that deposits on the shadow mask itself when fabricating an OLED). By comparison to inkjet printing, an OVJP process does not use solvents and therefore the OLED materials utilized are not limited by their viscosity or solvent solubility. We are working on developing our proprietary OVJP technology in collaboration with Professor Forrest of the University of Michigan under a U.S. Department of Energy (DOE) Solid State Lighting program. We have installed a prototype OVJP tool at our Ewing, New Jersey facility and are using this tool to build prototype white PHOLED lighting panels.

Our Strategic Relationships with Product Manufacturers

We have established evaluation, technology development, licensing and material supply relationships with numerous manufacturers of displays and lighting products. As of December 31, 2008, we had entered into 36 such relationships, four of which were newly established in 2008. These relationships generally are directed towards tailoring our proprietary OLED technologies and materials for use by each individual manufacturer. Our ultimate objective is to license our OLED technologies and sell our OLED materials to these manufacturers for their commercial production of OLED products. Our key relationships with product manufacturers in 2008 included the following:

Samsung SMD. In April 2005, we entered into an OLED Patent License Agreement with Samsung SMD. Under this agreement, we granted Samsung SMD license rights to make and sell active-matrix OLED displays on glass. Throughout 2008, we supplied several of our proprietary PHOLED materials to Samsung SMD for use in the manufacture of these OLED displays. We also continue to supply other of our proprietary PHOLED materials to Samsung SMD for evaluation and development activities under a separate agreement that has been in place since July 2001.

Chi Mei EL. In April 2007, we entered into an agreement to supply our proprietary PHOLED materials and technologies to Chi Mei EL for use in its manufacture of commercial AMOLED display products. The agreement ran through the end of 2008, and we are in the process of negotiating an extension of the agreement. We recognize commercial chemical sales and license fee revenues from our supply of material to Chi Mei EL.

LG Display. In May 2007, we entered into an agreement to supply LG Display with our proprietary PHOLED materials for use in AMOLED display products. In November 2008, this agreement was extended through June 2009. The agreement allow us to recognize commercial chemical sales and license fee revenues from our supply of materials to LG Display. In May 2008, we also demonstrated with LG Display a flexible, full-color, active matrix OLED display prototype.

Sony. We have been supporting Sony in its development of active-matrix OLED display products under various agreements since February 2001. We are currently operating under an evaluation agreement with Sony that has been in place since February 2005. That agreement enables us to sell our proprietary PHOLED materials to Sony for evaluation.

Seiko Epson. We have been conducting joint development work with Seiko Epson under various agreements since December 2004. This work relates to the application of our proprietary PHOLED technologies and materials to ink-jet printing processes used by Seiko Epson. In May 2008, we announced continued advances in P2OLED device results for ink-jet printing in collaboration with Seiko Epson. We also supply our proprietary PHOLED materials to Seiko Epson for evaluation and for use under our development program, and in July 2006 we licensed one of our ink-jet printing patents and certain related patent filings to Seiko Epson.

Konica Minolta. In August 2008, we entered into a technology license agreement with Konica Minolta for its manufacture and sale of OLED lighting products. We have also entered into separate agreements with Konica Minolta under which Konica Minolta continues to purchase our red and green PHOLED materials for evaluation.

Kyocera. In July 2008, we entered into license and material supply agreements with Kyocera for its manufacture and sale of OLED displays. These agreements were to become effective upon notice from Kyocera given on or before December 31, 2008. We recently agreed with Kyocera to extend this date for one additional year.

Tohoku Pioneer. In August 2003, we began supplying our proprietary red PHOLED material to Tohoku Pioneer, a subsidiary of Pioneer Corporation, for the commercial production of a passive-matrix OLED display product. Tohoku

Pioneer continued purchasing this material from us in 2008.

DuPont Displays. In December 2005, we completed work under a Joint Development Agreement with DuPont Displays for the development of novel phosphorescent materials and device structures for solution-processed OLEDs. In December 2002, we entered into a Cross-License Agreement with DuPont Displays for its manufacture of solution-processed OLED display products. As of December 31, 2008, we had not received any royalties from DuPont under that agreement.

Our OLED Materials Supply Business

In support of our OLED licensing business, we supply our proprietary OLED materials to display manufacturers and others. We device-qualify our materials before shipment in order to ensure the materials meet required specifications. We

believe that our inventory-carrying practices, along with the terms under which we sell our OLED materials (including payment terms) are typical for the markets in which we operate.

PPG Industries

We have maintained a close working relationship with PPG Industries since October 2000. Under our original agreements, PPG Industries conducted OLED materials development work for us and supplied us with our proprietary OLED materials. Our relationship with PPG Industries on the development of OLED materials changed in 2006, at which time we assumed sole responsibility over OLED materials development activities. In connection with that change, we hired four chemists from the PPG Industries' OLED materials development team to work for us in our newly constructed synthetic chemistry laboratories.

Our new OLED Materials Supply and Service Agreement with PPG Industries went into effect in January 2006. Under that agreement, PPG Industries remains responsible, under our direction, for manufacturing scale-up of our proprietary OLED materials, and for supplying us with those materials for research and development, and for resale to our customers, both for their evaluation and for use in commercial OLED products. Through our collaboration with PPG Industries, key raw materials are sourced from multiple suppliers to ensure that we are able to meet the needs of our customers on a timely basis. In January 2008, we extended the term of the OLED Materials Supply and Service Agreement through December 2011.

Our OLED Material Customers

Throughout 2008, we continued supplying our proprietary PHOLED materials to Samsung SMD for use in its commercial AMOLED display products. Samsung SMD is currently the largest manufacturer of AMOLED displays for handset and other personal electronic devices. Samsung SMD's customers for these products have included many well-known consumer electronics companies throughout the world.

In 2008, we continued supplying our proprietary PHOLED materials to Chi Mei EL for use in its commercial AMOLED display products, and to Tohoku Pioneer for use in its commercial passive-matrix OLED display products. In November 2008, we also renewed our commercial supply agreement with LG Display. During the year, we supplied our proprietary OLED materials to various other product manufacturers for evaluation and for purposes of development, manufacturing qualification and product testing.

Collaborations with other OLED Material Manufacturers

We continued our non-exclusive collaborative relationships with other manufacturers of OLED materials during 2008. These included relationships with Nippon Steel Chemical Company (NSCC) and Idemitsu Kosan Co., Ltd., both of which are focused on matching our proprietary PHOLED emitters with the host and other OLED materials of these companies. In March 2008, we announced a relationship with LG Chem, Ltd. focused on combining our PHOLED materials and technology with LG Chem's complementary OLED materials. In December 2008, we announced a strategic business relationship with SFC Co., Ltd. for the development of PHOLED material systems. We believe that collaborative relationships such as these are important for ensuring success of the OLED industry and broader adoption of our PHOLED and other OLED technologies.

Research and Development