

FOR IMMEDIATE RELEASE

Toyo Ink to Showcase Conductive Materials, EMI Shield Film at Printed Electronics USA 2011

November 3, 2011, Wood Dale, IL—Toyo Ink America, LLC announced today that it, in cooperation with its sister-subsidiary Toyochem Co., Ltd., the special chemicals arm of the Toyo Ink Group, will be showcasing the Group's high-tech solutions for the electronics field at Printed Electronics USA 2011, **Booth G111**. The trade show will run from November 31 – December 1, 2011, at the Santa Clara Convention Center in California.

Leveraging the company's expertise in the fields of dispersion, printing and curing, Toyo Ink has been a technology leader in the manufacturing and application of inks and specialty resins for over 100 years. As such, Toyo Ink can customize materials to meet critical customer requirements of substrate material, electrical conductivity and durability.

At this year's show, the Toyo Ink Group will emphasize the performance benefits of its cutting-edge materials and products that are specially designed for printed electronics applications. Among the new products and technology to be featured are Toyo's Rexalpha™ series of conductive inks, Lioresist™ series of insulator inks, electromagnetic interference (EMI) shielding films and flexible transparent conductive materials under development.

Rexalpha Series of Conductive Inks

Toyo's Rexalpha series of conductive silver inks offer ultra-low resistance properties and low curing temperatures of 100 to 130°C, for faster curing times and superior printability. Toyo Ink's world-class silver ink also achieves fine-pattern printing at performance levels that rival photo-litho and etching methods, without the added cost and waste.

Compatible with a range of printing processes, such as rotary screen, flat screen, flexo and gravure, Rexalpha inks can be used to fabricate flexible printed circuits (FPCs), RFID antennas and EMI shields. Unique to Toyo Ink is also an ultraviolet (UV) curable conductive silver paste for use in screen and flexo printing applications.

Lioresist Insulator Inks

Toyo's Lioresist series of resist inks for printed circuit boards (PCBs) can be used as a stand-alone resistor or in conjunction with the Rexalpha conductive ink. Its comprehensive line includes a black or white resist with strong insulation properties and exceptional heat-resistance as well as a series with superior optical characteristics.

In addition, Lioresist offers excellent adhesion on a variety of indium–tin oxide (ITO) substrates and superior screen printing results. When adopted as a color insulator, the material can simultaneously support optical density and insulation specifications, making it ideal for use in touch screen panels and FPCs. It can also be applied as an etching resist to reduce layers in PCBs.

EMI Shield Films

Made from a proprietary urethane formulation Toyochem's EMI shield films are used to protect sensitive electronic devices from electronic interference in FPCs. Toyochem has simplified the shielding structure to two layers as opposed to the conventional four-layer design. This results in a 22 μ m post-press thickness of the shielding layer with highly flexible and superior gap-fill properties that exceed those of the competition.

In addition, Toyochem is working to develop a high-frequency shielding film customized for next generation communication systems.

Flexible Transparent Conductive Materials Under Development

Leveraging Toyo's proprietary materials and advanced processing technology, the company is currently developing transparent conductive materials for fabricating printed electronics such as flexible displays and solar cells. Toyo's conductive materials are not only pliable, but can also be applied via a printing process, two functionalities that are impossible to achieve through the conventional ITO vapor deposition method.

Toyo's transparent conductors are well suited to printing methods based on low-energy, environmentally-sound film manufacturing processes. The special properties of the conductor allow it to bend when being applied to a thin film, making it possible to realize highly flexible transparent conductive modules as well as achieve significant cost-performance advantages.

About Toyo Ink America, LLC

Headquartered in Wood Dale, Illinois, Toyo Ink America, LLC is a leading manufacturer and supplier of high-quality, value-added printing solutions to the commercial sheetfed, packaging and printed electronics markets. Our comprehensive lineup of inks, coatings, polymers and adhesives are designed to ensure quality and productivity benefits in wide array of printing applications. Combined with our local manufacturing and research capabilities, our commitment to quality and customer service is as vibrant and reliable as the very materials we craft. For more info, see www.tia.toyoink.com.

About Toyochem Co., Ltd.

Based on the Toyo Ink Group's polymer synthesis, colorant, advanced dispersion and organic chemical synthesis, Toyochem Co., Ltd. is a global supplier of polymers, coatings and color and functional materials. These products are used in many different applications indispensable to everyday life, including everyday signs, beverage cans, automotive interiors, home electronics, cosmetics, smartphones and the solar cells that will play a key role in generating new energy. For more info about Toyochem, see www.toyo-chem.com/en/.

For more information about the Toyo Ink Group, see the website of the parent company at schd.toyoinkgroup.com/en/.

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