

Breakthrough in Direct Photopatterning of Quantum Dots Using Diazirine-Based Crosslinkers

Unlocking the future of universal photopatterning with diazirine crosslinkers.

VICTORIA, BRITISH COLUMBIA, CANADA, February 6, 2025 /EINPresswire.com/ -- XLYNX Materials announces a pioneering breakthrough in the direct photopatterning of colloidal quantum dots

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Our diazirine crosslinkers enable high-resolution, non-destructive quantum dot photopatterning, unlocking new possibilities for next-generation electronics, photonics, and advanced materials.”

Dr. Stefania Musolino, Head of R&D, XLYNX Materials

(QDs), addressing long-standing challenges in resolution, scalability, and material stability. Recently featured in the *Journal of the American Chemical Society*, the research showcases how electron-optimized diazirine-based crosslinkers enable non-destructive, high-resolution patterning of QDs without compromising their luminescent properties.

Quantum dots play a crucial role in next-generation technologies, from ultra-high-definition full-color displays to hyperspectral imaging systems. However, conventional photolithography disrupts their delicate surface chemistry, limiting optical and electronic performance. XLYNX's

diazirine-based crosslinkers introduce a precise, air-stable, and scalable solution that eliminates the need for traditional photoresists and etchants, ensuring seamless integration with standard photolithography processes.

Unlike conventional methods that compromise QD integrity, XLYNX's innovative crosslinkers enable non-destructive patterning, preserving the properties of heavy metal-free InP/ZnSe/ZnS quantum dots under ambient conditions. This breakthrough allows for high-resolution imaging with precision exceeding 13,000 pixels per inch (ppi), while simultaneously enhancing device performance—achieving peak external quantum efficiency (EQE) of 15.3% and a maximum luminance of approximately 40,000 cd/m².

Beyond performance improvements, XLYNX's approach aligns with the growing demand for sustainable manufacturing. By eliminating the need for toxic photoresists and etchants, this technology significantly reduces environmental impact while maintaining compatibility with existing industrial workflows.

With applications spanning multiple industries, XLYNX's photopatterning technology is poised to drive innovation in high-performance QLED, OLED, and microLED displays, flexible electronics such as foldable screens and wearable devices, and photonics-based technologies including quantum dot lasers and sensors. As an eco-friendly alternative to traditional lithography, it offers a scalable and industry-ready solution for next-generation electronic and optoelectronic devices.

About XLYNX Materials

XLYNX is the global leader in materials-based diazirine crosslinking and is working with industry leaders and innovative researchers from around the world to address long-standing material adhesion, stability, and strengthening challenges. The company's diazirine crosslinking technology has been published in numerous peer-reviewed academic journals, including Science, and the company was recently awarded a 2023 Innovation Award by the Adhesive and Sealant Council (ASC), joining past winners that include DuPont, Dow, PPG, and Avery Dennison.

To learn more, visit www.xlynxmaterials.com or contact XLYNX Materials at info@xlynxmaterials.com. Trial quantities of PlastiLynx PXN can be purchased through the company's website and can often be shipped within a week.

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