INNOVATION SPOTLIGHT

The Sustainable Evolution of Radiation Curing

As industries move faster toward sustainability and circular production, radiation curing is gaining attention, not just as a replacement for older technologies, but as a key driver of innovation in modern coatings. Radiation curing is no longer a niche; it has become a strategic platform for innovation. As equipment becomes more compact and intelligent, and as formulations evolve to meet both regulatory and market demands, the future of coatings is being shaped by light!

Among the most exciting areas of innovation in radiation curing are related to LED curing and excimer.
These new technologies are driving demand for more specialized products, including LED boosters and better adapted resins for excimer-cured low-gloss finishes, particularly in water-based UV.

allnex will join this year's RADTECH conference with a lecture on WB UV Excimer Resin: Combining Ultra-low Gloss with High Performance in Coatings. Our speaker, Elodie Siband (Sr Research Scientist Radcure) will present advanced research on WB UV Excimer Resins, which offer a unique combination of ultra-low gloss appearance and high-performance properties. Attendees will gain insights into how these resins are developed to meet the changing demands of modern coatings applications, and how they contribute to sustainability and efficiency in industrial processes.

Learn more about our innovations

Lecture : WB UV Excimer Resin:
Combining Ultra-low Gloss with High Performance in Coatings
Speaker: Elodie Siband,
Sr Research Scientist RAD
Date: October 29, 2025
Time: 08:30 – 09:00 AM CET
Conference room 2

RTE conference programme 2025 - Radtech

For additional details reach out to our technical experts:

Industrial Coatings:
Xavier Deruyttere

Graphic Arts:
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The evolution of UV LED curing has reached a point where it is no longer just a promising alternative, it is now a cornerstone of modern coating technology. With its rapid maturation, UV LED systems offer a compelling combination of efficiency, reliability, and environmental responsibility. Unlike traditional mercury-based lamps, UV LED units switch on and off instantly, eliminating warm-up times and enabling precise process control. Their lower energy consumption and extended lamp life contribute to reduced operational costs, while the absence of ozone generation and mercury emissions supports safer working environments and regulatory compliance.

UV LED acrylate boosters are essential tools for optimizing surface cure in LED-based radiation curing systems because UV LED lamps emit light primarily in the UVA range (365–405 nm), which lacks the shorter wavelengths (UVC) that are more effective at initiating surface cure. This limitation, combined with the presence of atmospheric oxygen, can result in tacky or under-cured surfaces, especially in thin films or pigmented coatings. Oxygen molecules interfere with the free radical polymerization process by quenching photoinitiators or scavenging radicals, slowing down or halting the cure at the surface. Acrylate boosters, such as EBECRYL® LED03, LED 04 and LED 05 contain abstractable hydrogen atoms that react with peroxy

radicals formed during oxygen inhibition, neutralizing them and allowing polymerization to proceed. Because these boosters also contain acrylate functionality, they become part of the cured polymer network, reducing migration and improving film integrity. They enable formulators to overcome the inherent limitations of LED curing while maintaining performance, safety, and compliance with demanding application standards. Their ability to adapt to a wide range of applications, while reducing energy consumption and enhancing performance, makes them essential components in the next generation of LED-curable coating systems.

Industries across the board are embracing the LED technology. In industrial wood coatings, UV LED lamps systems provide deep curing capabilities with minimal heat exposure, preserving substrate integrity while delivering robust, scratch-resistant finishes. Plastics substrates, which demand both visual precision and mechanical durability, benefit from the controlled curing and low thermal impact of LED systems. Meanwhile, in Graphic Arts, where speed and detail are dominant, UV LED enable high-throughput production without compromising print quality or adhesion…

Excimer UV curing is revolutionizing surface aesthetics by enabling the creation of low-gloss, ultra-matte finishes. Unlike conventional gloss control methods that rely on matting agents or mechanical abrasion, excimer lamps emit short-wavelength UV light (typically 172 nm) for surface modification. This process forms a micro-folded surface structure and achieves very low gloss levels without the need for matting agents. It offers precise control over surface morphology, allowing manufacturers to fine-tune gloss levels (from silky matte to soft-touch satin), all in a single pass.

This technology is particularly impactful in furniture and flooring, where tactile feel and visual softness are essential, as well as in consumer electronics and luxury packaging, where matte elegance, low reflectivity, and high-speed production are key.
The development of water-based UV solutions for excimer curing is opening up a new world of applications where spray coating is required. It is reshaping how coatings are formulated, applied, and cured; whether retrofitting existing lines or designing new ones. Companies can have now tailor curing systems to meet specific performance, aesthetic, and environmental goals, while benefiting from higher versatility and VOC-free spray solutions that align with increasingly stringent sustainability standards.

This new Waterbased UV material developed for Excimer curing that is presented at conference Radtech 2025 is complementing the modern UCECOAT® water-based UV resins portfolio of allnex, It provides excellent adhesion across multiple substrates, excellence response to Excimer curing with resistance to stains, chemicals, and yellowing.

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