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# KAYAKU ADVANCED MATERIALS

## A 'PARYLENE' TOUCH TO THE COATING INDUSTRY



WARREN BROUGHTON,  
BUSINESS UNIT MANAGER

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# KAYAKU ADVANCED MATERIALS

## A 'PARYLENE' TOUCH TO THE COATING INDUSTRY

**W**hen the renowned chemist Michael Szwarc discovered Parylene in 1947, little did he know that the polymer would spur innovation in the world of protective coating. Built with a polycrystalline structure, the polymer perfectly conforms to a substrate and deposits a layer of a protective coating that is extraordinarily thin, smooth, and possesses dielectric properties. Unlike other conformal coatings that are generally applied in the liquid phase, Parylene, in the gaseous state, disperses evenly throughout a vacuum chamber to form a polymer film on the object. This way, it negates the effects of gravity and surface tension, eliminating defects such as bridging, thin-out, pinholes, puddling, run-off, and sagging.

The numerous benefits of parylene also include physical stability and chemical inertness, providing substances with electrical insulation, moisture and chemical isolation, mechanical protection, enhanced lubricity, and surface consolidation to avert flaking or dusting. It stands out from the competition with its ability to provide coatings with a friction coefficient as low as 0.25 to 0.30. In brief, parylene conformal coatings provide environmental and mechanical protection to extend product life, prevent costly repairs, and, most importantly, reduce the risk of failure. Out of the many coating products existing today, parylene serves as the go-to solution capable of meeting the needs of several verticals— aerospace, defense, and medical—across various applications.



**WARREN BROUGHTON,**  
BUSINESS UNIT MANAGER



Bolstering high-tech manufacturers' ability to meet the growing demand for parylene conformal coating is Kayaku Advanced Materials' Paratronix division. "We are a pioneer in offering unrivaled parylene coating services and solutions to customers in the aerospace, defense, industrial, and medical industries," says Warren Broughton, the Paratronix Business Unit Manager at Kayaku Advanced Materials Inc. (KAM). "We always strive to meet and exceed customer expectations through product quality, on time delivery, and responsive customer service." KAM achieves this through its ardent dedication and focus on developing groundbreaking technologies and processes that help them deliver repeatable, successful results.

### **A Journey towards Excellence**

The parylene coating services division at Kayaku Advanced Materials

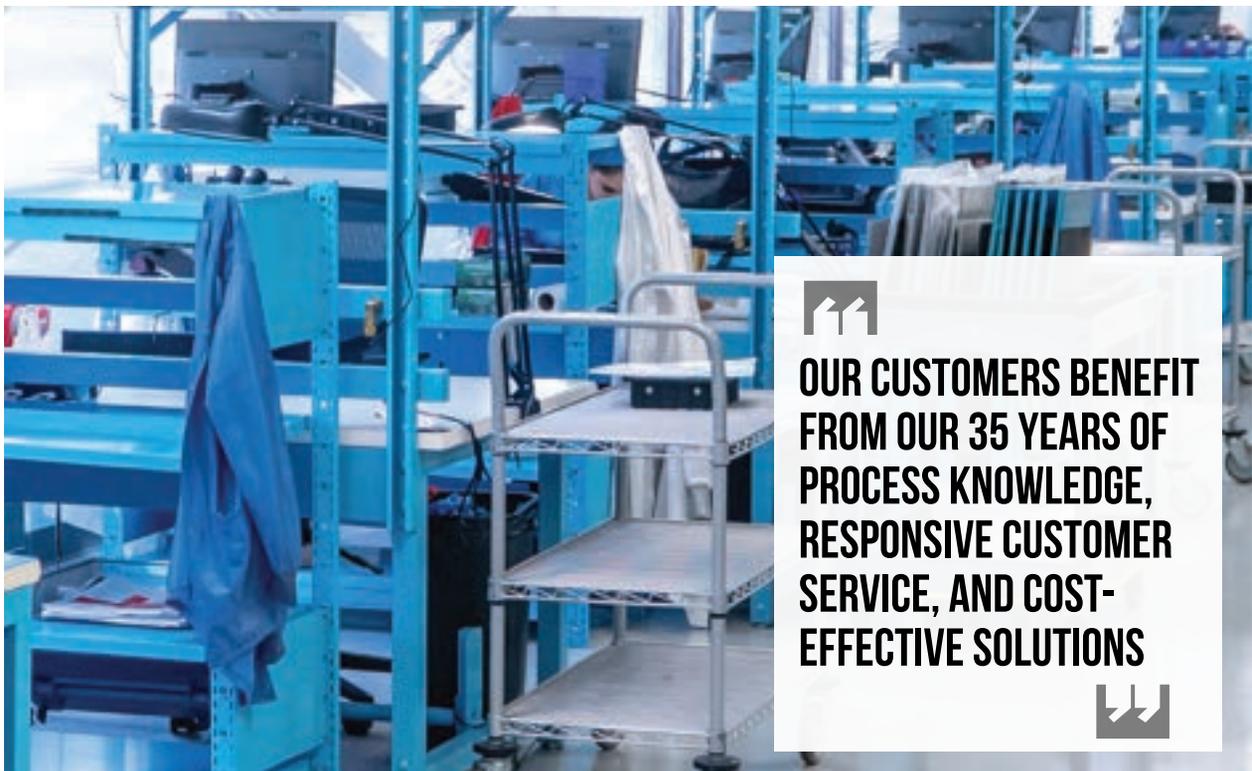
traces its roots back to the Paratronix company, a small but agile family-owned and operated business that had ingrained its signature in the protective coating industry since 1981. A few years into the business, they forayed into designing and developing robust parylene coating equipment, training organizations to transfer coating operations with in-house systems & processes. In no time, Paratronix was recognized for its prowess in delivering industry-best parylene conformal coating solutions and services to aerospace, defense, industrial, and medical customers.

Around this time, Kayaku Advanced Materials, which was already an established chemical solution provider, redirected its focus to acquire a broad customer base and establish strong footprints in different markets. Their efforts to achieve rapid growth and geographical expansion led to the acquisition of Paratronix, providing the company

with an extra edge through engineering involvement, continuous process improvement, and backing of their parent company, Nippon Kayaku Co., LTD. This way, Kayaku Advanced Materials has evolved into a leading provider of parylene coating services and solutions with a wide range of offerings in its arsenal. The company's service portfolio includes parylene conformal coating services, parylene removal and repair, parylene adhesion testing, FAI and PPAP reporting, process qualification, and process development, to name a few.

### **Excellence Leads to Quality**

In addition to its comprehensive parylene coating service suite, KAM is also known for its parylene coating systems—Paratronix Horizontal Parylene Coating System and Paratronix Vertical Parylene Coating System Model. While the former facilitates tumble coating on o-rings, seals, gaskets, ferrite cores, and



**OUR CUSTOMERS BENEFIT FROM OUR 35 YEARS OF PROCESS KNOWLEDGE, RESPONSIVE CUSTOMER SERVICE, AND COST-EFFECTIVE SOLUTIONS**



elastomeric parts, the latter excels in a static coating process. “Our service portfolio, combined with coating systems, provides us with the competitive edge to assist clients’ product development, from initial R&D, to early production, to the sale and support of inhouse systems,” mentions Broughton. KAM is also well equipped and flexible to align with unprecedented changes in demands, inducing steady growth, sudden spikes in demand, and more. The company is always willing to try the untried for fulfilling customers’ needs and establishing true partnerships.

Kayaku Advanced Materials also offers a wide range of resists and ancillary products that help meet almost any application’s need, including products such as PMGI and LOR bi-layer lift-off resists, SU-8 and KMPR epoxy resists, and PMMA resists. Additionally, they manufacture functional electronic printing inks, dielectric, epoxy, and other products under the PriElex product line. “We also serve as the exclusive North American distributor of DuPont Electronic Solutions’ Semiconductor Technology (ST) and Advanced Packaging Technology (APT) resists, dielectrics and ancillary products,” adds Broughton. “We distribute Micro Resist Technology’s (MRT) resist products, including unique optical products and resists for nano and micro imprinting as well as the Orgacon line of clear conductive inks and nanosilver ink made by AGFA.”

### **Performance in the Real World**

Having a robust line of products helps Kayaku Advanced Materials to cater to a wide range of clients, including several prominent players in the market. Broughton recalls the company’s recent collaboration with a client that was looking for barrier coating as well as a dielectric coating for their products. In its endeavor



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to find the best coating solutions, the client came across several organizations whose offerings were not aligned with its need for thin-film coating. KAM came in with its exceptional suite of parylene coating services and systems to coat the client’s products with a thin film—that is 100 nanometers thick.

Kayaku Advanced Materials also helped the client coat one of their parts with a flexible film that was 25 to 30 microns thick. To do this, KAM redefined its processes and created a flexible coating at that thickness, allowing the client to use it on their product. Later on, the client approached the company to purchase one of its coating machines to scale up their production. “Our customers benefit from our 35 years of process knowledge, responsive customer service, and cost-effective solutions,” adds Broughton.

### **Heading towards a Sustainable Growth**

Such instances of success manifest Kayaku Advanced Materials’ dedication to remain creative, and collaborative in its engagements with customers. The collaborative culture allows the team at KAM to listen to customer needs and work with them to engineer/develop solutions to satisfy their business requirements. By being responsive and agile, the company meets clients’ varying needs and extends itself technically to overcome the challenges of today and tomorrow. KAM is also committed to making necessary investments in infrastructure (personnel and equipment) to facilitate growth in its mature business realms and emerging spaces. “We’re very proactive to align and build our core competency of serving the niche and emerging market spaces,” says Broughton. “Our willingness to go the extra mile to meet clients’ needs and commitment towards customers make us unique in the market place.”

As an agile coating services company, Kayaku Advanced Materials is looking forward to extending its footprint to other industry verticals as well. This growth is backed by its supportive parent company, Nippon Kayaku Co., LTD, which invests in growth opportunities based on a solid business case. Continuous technological and process improvement is also a part of KAM’s growth strategy, making it a natural fit for current coating requirements.

“At Kayaku Advanced Materials, we embrace the KAYAKU spirit, a philosophy of continuously improving society with the best products through thoughtful and ceaseless progress. This allows us to emerge as the global leader, empowering our customers to imagine more, build more, and innovate more,” concludes Broughton. 



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