NANOPLEX FAAS

DATA SHEET

PEAK NANOPLEX™ FILMS AS A SERVICE (FAAS)

From the Peak NanoPlex Technology Center

ARCHITECTURE-FIRST FILM INNOVATION. DELIVERED IN WEEKS, NOT YEARS.

NanoPlex™ Films as a Service (FaaS) is an end-to-end development platform to rapidly design, prototype, validate, and scale custom nanolayered polymer films across the most demanding and innovation-driven markets.

Combining proven commercial polymers and precisely controlling their properties at the nanoscale, Peak's patented NanoPlex technology eliminates the need for multi-year resin development cycles. With data-driven architectural optimization and validation, its FaaS platform accelerates innovation, performance validation, and commercialization.

RAPIDLY

DESIGN

PROTOTYPE

VALIDATE

SCALE

THE POLYMER WAITING GAME

For decades, improving film performance required waiting for new polymer chemistry. That approach demands multi-year R&D programs, regulatory requalification, new supply chains, and billion-dollar investments before a single commercial roll is produced. The result is stalled innovation, high technical and financial risk, and limited design flexibility in fast-moving markets.

The industry needs a new model: **architecture-first innovation.** Instead of waiting for new chemistry, Peak Nano is engineering performance at the nanoscale by stacking ultra-thin layers of existing polymers to unlock entirely new material behaviors. FaaS compresses timelines, reduces risk, and delivers validated, scalable film architectures in months, not years.

Where We Deliver Impact

Medical, Healthcare, & Pharma

Electrical

Food & Beverage Packaging

Aerospace & Defense

Automotive

Industrial & Energy

- **Rapid Prototype Delivery**
  In 6-10 weeks
- **Faster Innovation Cycles**
  No long waits for new polymers
- **Dramatic Cost Reduction**
  Replace specialty resins with smart structures
- **De-Risked Commercialization**
  Integrated validation + scale-up pathway.
- **Cross-industry validation**
  In-house and through accredited labs
- **U.S. Engineering & Manufacturing**
  Two facilities in Cleveland, OH
- **Proven Technology**
  20+ global patents

THE SHIFT: ARCHITECTURE REPLACES CHEMISTRY

NanoPlex stacks dozens to thousands of ultra-thin polymer layers to activate new interfacial behaviors at the nanoscale.

Instead of inventing new materials, we re-architect proven ones.

This enables:

- Breakthrough barrier performance
- Advanced dielectric capability
- Improved toughness and thermal stability
- Sustainability through downgauging and mono-material design

Performance no longer depends on new chemistry. It depends on the architecture.

Traditional Films vs. NanoPlex™ Films

Capability	NanoPlex Films	Traditional Polymer Films
Innovation Model	Layer-by-layer architecture	New resin or blend
Time to New Capability	Months	2–10 years
Cost	Uses optimized commercial polymers	Specialty resin dependent
Performance Flexibility	Nearly infinite design control	Limited
Metamaterial Properties	Enabled	Not achievable
Sustainability	Designed-in recyclability & downgauging	Resin constrained
IP	Patentable architectures	Commodity

END-TO-END FILM DEVELOPMENT

Accelerated Time to Solution

NanoPlex Films as a Service (FaaS) transforms how advanced films are developed. Combining decades of nanolayer processing expertise with patented NanoPlex technology, Peak rapidly engineers application-specific film architectures. FaaS gives customers direct access to world-class materials science, accelerating innovation.

Our FaaS services include:

Requirements & Analysis

We translate your requirements into a materials-driven design blueprint.

Every FaaS engagement begins with a structured requirements review and materials science analysis. Peak Nano evaluates your performance targets – barrier, dielectric, mechanical, or thermal – then uses simulation, lab-scale trials, and nanolayer architecture modeling to identify the optimal film design. This data-driven approach eliminates guesswork and delivers a tailored blueprint to accelerate the path from concept to validated candidate.

Rapid Prototyping

We deliver working film prototypes in 6–10 weeks.

By arranging commercially available polymers into precision-engineered structures ranging from tens to thousands of nanolayers, Peak Nano significantly compresses development timelines. Following the architecture design, we rapidly fabricate prototypes using an advanced coextrusion platform. These prototypes enable immediate testing, integration trials, and performance validation, saving time while reducing technical and commercialization risk.

Testing & Optimization

We conduct rigorous in-house and third-party validation.

Peak then validates critical performance parameters, including mechanical strength, barrier properties, dielectric behavior, and thermal stability. Based on measured results, we refine the nanolayer architecture—adjusting layer count, thickness, composition, and symmetry to optimize performance against defined success criteria. This iteration ensures the final film meets or exceeds target specifications before advancing to scale-up.

Technical Package & IP Transfer

We provide complete documentation for the transition to commercial production.

Once the film architecture is validated, Peak Nano delivers a comprehensive Technical Transfer Package for a seamless transition from lab to production. This includes complete design documentation, processing parameters, material sourcing guidance, and recommended manufacturing pathways. IP licensing documentation is also provided, ensuring clear ownership or usage rights to support your transition to commercial production.

Scale-Up & Manufacturing Support

We provide ongoing support for commercial scale-up and manufacturing.

Following technical transfer, Peak Nano supports you in moving to commercial production, whether manufacturing is handled by Peak, a third-party partner, or in-house. Our team provides hands-on guidance during initial production runs, resolves scale-up challenges, and ensures process stability and quality consistency. From pilot volumes to full-scale manufacturing, we help customers scale confidently with ongoing advisory support for optimization, expansion, and regulatory alignment.

NANOPLEX™ FILMS AS A SERVICE

Development Process Overview

Peak Nano's FaaS engagement model follows a structured, milestone-based development approach designed to de-risk innovation and deliver validated, scalable film architectures.

Phase 1 | DEFINE

Align Objectives & Success Criteria

- Defining application requirements and performance targets
- Review of manufacturing context
- Development of materials-focused project charter

Phase 2 | RESEARCH & DESIGN

Architecture Development & Feasibility Modeling

- Evaluation of polymer combinations and nanolayer architectures
- Delivery of the simulation and feasibility matrix
- Delivery of Preliminary Design Concepts Report

Phase 3 | PROTOTYPE

First-Generation Sample Fabrication

- Production of Type 1 nanolayer prototypes
- Delivery within 6–10 weeks of design approval
- Readiness for physical evaluation and integration testing

Phase 4 | TEST & VALIDATE

Performance Verification Against Metrics

- Mechanical, barrier, dielectric, thermal, and regulatory testing
- Delivery of Prototype Performance Report

Phase 5 | OPTIMIZE

Data-Driven Refinement

- Architecture refinement based on measured performance
- Production of Type 2 optimized prototypes

Phase 6 | CUSTOMER VALIDATION

Real-World Integration Testing

- Customer evaluation within product or process
- Structured feedback and technical guidance

Phase 7 | TECHNICAL TRANSFER

Production-Ready Documentation

- Delivery of complete Technical Transfer Dossier
- Includes Architecture specs, SOPs, and sourcing guidance
- Includes IP documentation and licensing

Phase 8 | SCALE-UP SUPPORT

Commercialization & Manufacturing Alignment

- Pilot and commercial production coordination
- Tolling or in-house manufacturing support
- Optional ongoing advisory services

Phase 9 | FINAL INNOVATION REPORT

Documented Outcomes & Future Opportunities

- Delivery of complete project summary
- Identification of IP opportunities
- Recommendations for next-generation development

Ready to Accelerate Development?

Request a FaaS consultation or technical capabilities brief at https://www.peaknano.com/peak-nanoplex-technology-center or contact swalsh@peaknano.com