

# Orthopedics This Week

## Silicon Nitride Gets a Wingman: Supercharging Patient-Specific Implants

**KIM DELMINCO**

**S**INTX Technologies, Inc. has officially teamed up with Evonik Corporation — yes, that Evonik, the global heavyweight in high-performance polymers — to bring a commercial-scale silicon nitride-PEEK composite (SiN/PEEK) to real-world orthopedic practice.

The partnership gives SINTX something every implant innovator dreams of: industrial-strength manufacturing plus a material with actual clinical upside.

According to the agreement, Evonik will manufacture SiN/PEEK exactly to SINTX's specs, giving the company the green light to immediately produce AI-designed, 3D-printed, patient-specific implants. Think of it as biomaterials R&D finally catching up with what surgeons have been asking for on the back table for years:

A strong, infection-resistant, imaging-friendly implant that doesn't fight you — or your CT scans.

### If Polymer and Silicon Nitride Had a Child...

SINTX Chairman, President, and CEO Eric K. Olson told OTW that Evonik's capabilities have been the accelerator pedal this technology needed.

"Evonik has been an extraordinary collaborator," Olson said. "Their deep

polymer expertise and industrial-scale processes took what we started in early R&D and made it a production-ready biomaterial. Together, we engineered a SiN/PEEK compound that can be extruded, printed, and machined—unlocking AI-assisted, patient-specific implant production on equipment we already operate."

Translation for surgeons: Yes, they can actually make the stuff. Yes, it works with existing machines. And yes, it scales.

Olson is confident this partnership will influence the entire spectrum of custom devices — CMF, spine, trauma, oncology, and any niche where surgeons encounter anatomy that forgot to follow the textbook.

### Why Surgeons May Actually Care About SiN/PEEK

Olson didn't hold back here:

"Silicon nitride-PEEK is more than just a new material — it represents a fundamental shift in how patient-specific implants will be designed, manufactured, and implanted."

He highlighted the composite's unique skill set:

- Antipathogenic properties — helping manage infection risk, espe-



Source: SINTX Technologies, Inc.

cially in oncology, revision cases, or when the patient arrives carrying the microbial equivalent of a bad Yelp review.

- Osteogenic behavior — bone likes it, bone grows on it, and sometimes bone even grows through it.
- PEEK's mechanical versatility & radiolucency — because surgeons prefer to see what they're doing, before and after.
- Support for complex anatomies — for those cases where "off-the-shelf" might as well mean "off-the-table."

If silicon nitride and PEEK had a child, this is the composite that would get into med school early.

### Regulatory Moves & Future Access: Not Just for SINTX

SINTX plans to pursue additional regulatory clearances — not just for patient-

specific devices, but also for subtractively manufactured implants made from the same composite.

And here's a notable twist: SINTX and Evonik intend to make the SiN/PEEK material available to other manufacturers as well. In other words, this isn't going to be a proprietary walled garden. Any company tackling challenging spine, CMF, or oncology reconstructions could someday pick SiN/PEEK off the shelf.

Competition, meet innovation.

### Humanitarian Cases Come First

In the near term, SINTX is gearing up to respond to humanitarian requests for vertebral body replacement implants — especially in orthopedic and neurosurgical oncology, where unusual anatomy and infection risks often collide.

Chief Technology Officer Ryan Bock, Ph.D., emphasized the surgeon-driven nature of these early efforts:

“We’re responding to real-world surgeon requests in oncology-related care. Our initial focus is humanitarian-use cases while we build the quality systems and regulatory files needed for broader FDA pathways.”

Humanitarian-use implants are often where genuinely novel biomaterials prove themselves — and surgeons remember the ones that work.

### Bottom Line for Surgeons

A composite that is:

- infection-unfriendly,
- bone-friendly,
- radiology-friendly, and

- surgeon-friendly

...doesn't hit the market every week. SiN/PEEK may give orthopedics a material better suited to the modern era of AI-enabled design and patient-specific reconstruction. And with Evonik handling the polymer muscle, SINTX appears poised not just to scale the technology — but to share it with the rest of the industry.

Whether you're fixing a shattered vertebral body or navigating a difficult oncology case, SiN/PEEK might be the material that turns “custom implant” from a manufacturing challenge into a clinical default.

If this composite performs as advertised, silicon nitride may finally get the starring role it's been auditioning for since the 1990s. ♦