

## PRESS RELEASE

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### Engineering Innovation in Tubing for UHPLC

As chromatographers transition to UHPLC systems where pressures reach 15,000 psi or more, achieving a secure flow path among system components requires significantly enhanced performance from connection products — fittings and tubing. Additionally, greater demand for biocompatibility eliminates the conventional choice — stainless steel.

Recently, Senior Product Development Engineer Mark Hahn, provided insight into the development of IDEX Health & Science PEEK-Lined Stainless Steel tubing (PLS). “We found more and more chromatographers asking for nanoscale UHPLC tubing, that is also nonmetallic, so it can be used for bio-inert applications. Really, there is nothing on the market right now at that 1/1000 inch or 25 micron inner diameter (ID), so that’s what initiated this project. We experimented with a number of materials; and at the end of the day, nothing was as good or widely accepted as PEEK and stainless steel. From there, we developed a proprietary process to make a PEEK tube fit tightly inside a stainless steel tube with no gaps between them — which is very important for structural integrity and strength. And then, finally, we finished the tubing ends — these are fixed lengths of tubing — with a special tipping process that holds it all securely together even at pressures to 15,000 psi, and added our biocompatible, one piece UHPLC fittings on both ends.”

Hahn explained that another reason the development team chose PEEK was for its smooth inner surface, especially in contrast to stainless steel; “It has been shown that the inner surface of extruded tubing such as PEEK is greatly superior to the rougher inner surface of drawn stainless. A rough inner tubing surface can cause flow dispersion, so the smoother the better.” He also explained the other big challenge facing the team was to repeatedly achieve the nanoflow of 25 micron ID. “Just extruding a tube with a consistent 25 micron ID is really difficult to do without getting plugs or blockages in the tube. Beyond that, how do we get the 25 micron tube inside of the stainless steel tube and hold them all together without collapsing the ID? Ultimately, we were able to get a good fit between the PEEK and stainless steel tube without interfering with that nano ID.”

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In a final pre-launch stage, the IDEX Health & Science development team submitted samples to a third-party laboratory for protein characterization studies, comparing PLS tubing to matching stainless steel tubing. The lab validated an increase of up to ten percent in recovery of the protein standard, just from switching from stainless steel to the PEEK-lined stainless steel tubing. “That’s higher sensitivity in UHPLC results,” Hahn summarized, and “That’s what we’re all reaching for.”

### **About IDEX Health & Science LLC**

IDEX Health & Science offers a three-fold advantage to its customers by bringing life to fluidic pathways with products, people, and engineering expertise. These integrated assets work seamlessly together to enable fluidic pathways beyond a combination of components, which collectively position IDEX Health & Science as the forerunner in biotechnology and life science fluidics. Known as industry leaders in the design, development, and manufacturing of liquid subassemblies, fluidic products and related sub-systems, IDEX Health & Science provides the best solution for analytical, diagnostic, and biotech instruments. Product offerings include: fluidic connections, valves, pumps, degassers, column hardware, manifolds, and customized assemblies. For more information visit: [www.idex-hs.com](http://www.idex-hs.com)

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