



Sentek Instrument's *picoDAS* Enables New Frontiers in Distributed Magnetic Sensing

Blacksburg, VA – September 22, 2025 – Sentek Instrument, a global leading manufacturer of high-performance optical sensing technologies, is proud to announce the performance results for its *picoDAS*, the world's most sensitive Distributed Acoustic Sensing System. The results appear in the most recent issue of *Photonics*. Researchers used Sentek Instrument's *picoDAS* system with its proprietary fiber Bragg Grating (FBG)-based sensor array coupled to Metglas® magnetostrictive alloy to create a highly sensitive fully distributed magnetic sensor that can be deployed over very long distances.

Fiber optic technologies are opening new frontiers in sensing, offering the potential to significantly enhance performance across a wide range of applications. One area drawing particular attention is magnetic sensing, with promising implications for structural health monitoring (SHM) and ferromagnetic object detection. Unlike traditional solutions such as fluxgate magnetometers and inspection gauges, which function only as single-point sensors, this new approach leverages fiber optic distributed strain sensors combined with magnetically biased magnetostrictive materials. The result is the ability to detect both static and dynamic magnetic fields continuously along extended lengths of sensing fiber—delivering broader coverage and more comprehensive data than ever before.

Researchers from Virginia Tech's Department of Materials Science and Engineering have verified this approach by showing that fiber optic distributed strain sensors in tandem with magnetically biased magnetostrictive material, can detect static and dynamic magnetic fields across long lengths of sensing fiber. The results have been published in the peer-reviewed journal, *Photonics* at <https://www.mdpi.com/2304-6732/12/9/914>. Sentek Instrument's *picoDAS* distributed acoustic sensing (DAS) system coupled with Sentek's high performance distributed fiber Bragg grating (FBG) sensing arrays played a critical role in achieving the high quality results reported.

Anbo Wang, CEO of Sentek Instrument, and a contributor to the research stated, "We are thrilled with the recently reported results that clearly show the advantages of the DAS technology we've developed at Sentek in critical application areas like distributed magnetic field sensing. These results help to lay the groundwork for the further commercialization of this technology."

Sentek Instrument's *picoDAS* features patented technology that delivers the superior performance required to accurately measure distributed magnetic signals over long ranges. *PicoDAS* offers the highest sensitivity available with deterioration-free performance along the

entire sensing range up to ten kilometers. Field proven for long-term reliability, Sentek Instrument's *picoDAS* offers exceptional ability to detect extremely weak acoustic events, such as micro-seismic emissions below the detection thresholds of other DAS products.

Researchers concluded that the FBG-based magnetic sensors have the potential to significantly advance applications where precise magnetic sensing is essential. In structural health monitoring, these sensors could enable real-time monitoring over kilometers of infrastructure. They could also be deployed for large-scale ferromagnetic object detection along extensive perimeters. More broadly, the ability to detect distributed static magnetic fields opens the door to substantial improvements across a wide range of magnetic sensing applications.

For more information on Sentek Instrument's distributed acoustic sensing systems, visit <https://www.sentekinstrument.com/das/>

About Sentek Instrument

Sentek Instrument is a technology leader in advanced optical sensing solutions for aerospace, energy, infrastructure and defense applications. By combining innovative design with precision engineering, Sentek delivers high-performance measurement systems that thrive in extreme environments.

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