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Sciperio Awarded U.S. Patent for Breakthrough High-Viscosity Material Dispensing Technology

ORLANDO, FL – Sciperio, Inc., the research and development arm of nScrypt, announced the issuance of U.S. Patent No. 12,654,396 B2, titled *"Pump for Additive Manufacturing."* The patented technology, which forms the foundation of nScrypt's QuantiHelix® dispensing platform and is integrated into the company's advanced manufacturing systems, enables the precise dispensing of highly viscous materials for applications ranging from printed electronics and aerospace components to biomanufacturing and defense manufacturing.

Direct write manufacturing processes frequently rely on challenging materials such as conductive inks, adhesives, epoxies, and biological materials. Traditional dispensing systems often struggle to maintain consistent flow, particularly at the start and end of print paths or during complex geometries, resulting in over-deposition, under-deposition, and other defects that can impact product quality and performance.

Sciperio's patented technology addresses these challenges by combining a servo-controlled progressive cavity pump with a high-precision, servo-motor-controlled valve. The system dynamically regulates material flow in real time, delivering highly accurate volumetric dispensing of materials exceeding 1 million centipoise (cP) in viscosity while significantly reducing common print defects and improving manufacturing consistency.

The technology supports a wide range of advanced manufacturing applications, including printed electronics, electronics packaging, antenna manufacturing, and microelectronics. It also supports point-of-need manufacturing initiatives for the U.S. Department of Defense, where reliable, high-precision dispensing capabilities are essential for manufacturing and repair austere and remote environments.

"This patent reinforces our commitment to advancing the capabilities of direct digital manufacturing and additively manufactured electronics," said Dr. Kenneth Church, CEO of Sciperio and nScrypt. "By enabling precise control of highly viscous materials, this technology provides industry and government partners with new capabilities to manufacture and repair complex, high-performance products with

greater accuracy, consistency, and reliability. It also reflects our continued investment in U.S.-developed advanced manufacturing technologies that expand what is possible in digital manufacturing."

The patent recognizes the innovative contributions of inventors Paul I. Deffenbaugh, Michael W. Owens, Dr. Kenneth H. Church, Joshua Goldfarb, and Emily Sassano.

About nScrypt

nScrypt designs and manufactures award-winning, next-generation, high-precision microdispensing and 3D manufacturing systems that deliver unmatched accuracy and flexibility for industrial applications. Its technologies serve the printed electronics, electronics packaging, communications, printed antenna, chemical and pharmaceutical, defense, aerospace, and advanced manufacturing industries.

nScrypt's systems are highly customizable precision motion platforms that support material-agnostic dispensing, milling, drilling, polishing, pick-and-place operations, conformal printing, and automatic tool changing. With build areas up to 1.5 meters by 1.5 meters and precision performance of up to ±5 microns, nScrypt enables users to go directly from a CAD file to a fully functional product, complete with embedded electronics and without manual tool changes. The company is headquartered in Orlando, Florida.

About Sciperio

Sciperio, Inc. is the research and development arm of nScrypt, specializing in advanced manufacturing technologies, electronics, bioengineering, and next-generation digital manufacturing solutions. Founded in 1996, Sciperio conducts cutting-edge research across the physical and biological sciences and develops innovative technologies that support defense, aerospace, medical, and industrial applications worldwide.