Industrial Sonomechanics Advances the Science of Water-Soluble THC With Scalable Ultrasonic Nanoemulsion Technology

Industrial Sonomechanics advances water-soluble THC and CBD formulation with scalable ultrasonic nanoemulsion technology for stable, fast-acting products.

MIAMI, FL, UNITED STATES, August 19, 2026 /EINPresswire.com/ -- Industrial Sonomechanics (ISM), a Miami-based research, equipment design, and process consulting firm, has released new process data on the use of high-intensity ultrasound to disperse cannabinoids in water-based formulations, addressing a persistent formulation challenge for cannabis and hemp product developers.

A Persistent Formulation Challenge
Cannabinoids such as THC and CBD are oil-soluble compounds, making them difficult to incorporate uniformly into water-based products such as beverages, tinctures, topicals, and oral formulations. Formulators must manage droplet size, physical stability, and processing conditions to produce consistent oil-in-water formulations.
Nanoemulsion approaches can reduce the size of oil droplets and improve their dispersion throughout an aqueous formulation. However, achieving consistent results requires control over both formulation and processing conditions.

What the Data Shows
ISM's new process data, developed using the company's Barbell Horn Ultrasonic Technology, describes how high-intensity ultrasonic cavitation can reduce oil-phase cannabinoid droplets to the nanoscale.
Under the tested formulation and storage conditions, the resulting nanoemulsions remained dispersed in water and exhibited optical clarity and physical stability during storage testing. Performance depends on the formulation composition and processing conditions used.
ISM has also documented the process in a set of Standard Operating Procedures (SOPs) designed to support repeatable processing across batches.
Further technical background on the process is available on the ISM website.

Supporting Scale-Up
Moving a formulation from laboratory development to commercial production can introduce changes in processing conditions that affect the finished product. ISM's Barbell Horn Ultrasonic Technology is designed to support scale-up by maintaining high ultrasonic amplitudes as

processing moves to larger equipment.
ISM's processor portfolio includes the LSP-600 laboratory-scale processor, BSP-1200 bench-scale processor, and ISP-3600 industrial-scale processor. The company's scale-up methodology is designed to allow processes optimized on smaller systems to be transferred to larger production equipment while maintaining optimized processing conditions and reproducibility.

For cannabinoid formulators, this approach can provide a pathway for transferring a laboratory-optimized process to larger-scale production without requiring a fundamentally different process solely because of increased processing volume.

“The goal of this data set is to give formulators a clearer view of what changes, and what needs to remain controlled, as a process moves from laboratory development to production,” said an Industrial Sonomechanics representative. “By documenting the processing approach and scale-up considerations, we want development teams to have clearer information when evaluating ultrasonic nanoemulsification for commercial production.”

Technical Application Context
Water-compatible cannabinoid formulations are being developed for beverages, oral products, topicals, and other applications where oil-based cannabinoids need to be incorporated into aqueous systems. Nanoemulsion technology provides one approach for reducing droplet size and improving the dispersion of oil-soluble active ingredients in water-based formulations.
ISM develops ultrasonic processing equipment and formulation technologies for applications including nanoemulsification, extraction, dispersion, and other high-intensity ultrasonic processes.

About Industrial Sonomechanics
Industrial Sonomechanics (ISM) is a research and development, equipment design, and process consulting firm based in Miami, Florida. The company specializes in high-intensity ultrasonic processing and works with clients across the medical cannabis, pharmaceutical, nutraceutical, food and beverage, cosmetic, and industrial sectors.
For more information, visit the ISM website.

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