

## **CBD NANOEMULSIONS PRESENTATION**

Cannabidiol or CBD is one of the major cannabinoid compounds found in the cannabis plant. CBD can bring about a number of changes throughout the body - it can act as an anti-inflammatory and anti-convulsant, help people get a better night's sleep, and has been shown to relieve pain. However, when taken orally CBD bioavailability is less than 20%, with some estimates as low as 6%. There are several reasons for this, including low absorption.

To improve CBD's bioavailability it processed into a nanoemulsion.

Nanoemulsions are solutions that contain evenly distributed microscopic, insoluble particles within a mixture of water, oil and other substances that reduce surface tension and stabilize the mixture.

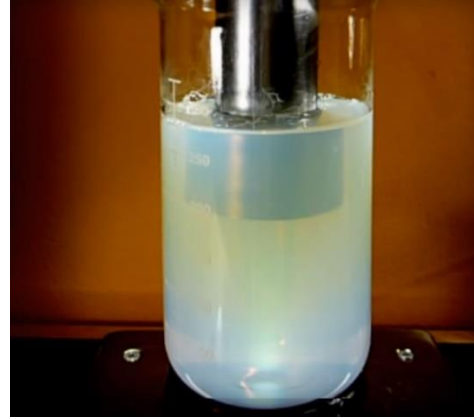
The production of nanoemulsions requires significant energy depositions and strong shear forces that can overcome the interfacial tension during the finely dispersed droplet formation.

LeMar offers high-amplitude ultrasonic processors for the production of nanoemulsion. The processors developed by the SONOMECHANICS are based on our patented Barbell Horn Ultrasonic Technology (BHUT), which makes it possible to tremendously intensify the manufacturing processes and guarantees reproducible and predictable results at any scale of operation.

Ultrasonic Technology make it possible to directly transfer laboratory-optimized processes to industrial production, always guaranteeing reproducible post-scale-up results. Our ultrasonic liquid processors can output extremely high amplitudes (over 100 microns) at any scale.



Before the Ultrasonic Mixing



After the Ultrasonic Mixing.

### Acoustic Cavitation: The Driving Force Behind Ultrasonic Processing

Liquids exposed to high-intensity ultrasound undergo ultrasonic cavitation. It can be seen as a cloud of bubbles forming in the vicinity of an ultrasonic horn and heard as an intense hissing noise. Cavitation produces violently and asymmetrically imploding vacuum bubbles, causing micro-jets with extremely strong mechanical shear forces. These forces are responsible for the well-known ability of ultrasound to drive a multitude of physical and chemical processes forward.

LeMar designs and build complexes as per customer application for capacity and space. We offer bench and industrial-scale high-power ultrasonic processors for the production of nanoemulsions.

