

# Spe-ed SFE-2

## 2-Vessel Simultaneous Oven-based Extraction System

The *Spe-ed* SFE-2 is the original SFE in our series of instruments for supercritical fluid extraction. Built in conjunction with the USDA, this system was designed to meet the rigorous needs of day-to-day use in the research lab. It is simple to operate, fast and affordable, with unique features not found in other SCF systems.

The system features:

- Data Logging
- Touch-screen Panel
- New Software
- Monitor from Smart Phone
- temperatures to 240°C
- pressure up to 10,000 psi (690 BAR)
- pump flow rates up to 400mL/min
- independent control of flow rates to each vessel
- fully-adjustable, non-clogging, variable restrictors
- parallel processing capabilities of up to 2 vessels from 5mL to 1.0L
- collection into SPE cartridges or standard glassware
- in-line trapping capabilities
- modifier addition capability
- multiple flow path capability
- extract directly from liquid samples



*Monitor from  
your smart phone*



# Why Supercritical Fluids?

## Supercritical Fluids Revolutionize Your Processes

No longer an exotic laboratory curiosity, but now a cost-effective tool to improve your process development.

No matter what your business...

### Natural products

- Medicinals
- Biomass extractions
- Fragrances/essential oils

### Pharmaceuticals/foods

- Natural products
- Enzymatic reactions
- Reaction cleanups
- Hydrogenations

### Material Science

- Nanoparticles
- Aerogels
- Coatings
- Impregnations
- Metal Injection Molding (MIM)

### Electronics

- IC Cleaning
- Resist developer
- Micro Electro-Mechanical Machines (MEM) cleaning

### Textiles

- Dyeing
- Impregnations

### Cleaning

- Critical cleaning machine parts
- ICs
- MEMs

### Subcritical/Supercritical Water

Carbon dioxide is in its supercritical fluid state when both the temperature and pressure equal or exceed the critical point of 31°C and 73 atm (see diagram). In its supercritical state, CO<sub>2</sub> has both gas-like and liquid-like qualities, and it is this dual characteristic of supercritical fluids that provides the ideal conditions for extracting compounds with a high degree of recovery in a short period of time.

By controlling or regulating pressure and temperature, the density, or solvent strength, of supercritical fluids can be altered to simulate organic solvents ranging from chloroform to methylene chloride to hexane. This dissolving power can be applied to purify, extract, fractionate, infuse, and recrystallize a wide array of materials.

Because CO<sub>2</sub> is non-polar, a polar organic co-solvent (or modifier) can be added to the supercritical fluid for processing polar compounds. By controlling the level of pressure/temperature/modifier, supercritical CO<sub>2</sub> can dissolve a broad range of compounds, both polar and non-polar.

## Supercritical Fluids can revolutionize your processes!

### A Supercritical Fluid

- is fast and selective
- allows for reduced extraction and purification steps
- provides decreased processing time
- has reduced organic solvents
- gives higher yield with lower cost

