Bruker Product Information (microESR for Oxidative Resistance in Edible Oil)

MicroESR – Electron Spin Resonance for Edible Oil Analysis

Rancidity of edible oil is a major problem in food related industries. It occurs during storage and is caused by free radical oxidation of unsaturated fatty acids, resulting in foul odors and tastes in the final product. During the past two decades, the food industry has transitioned to the use of natural plant extract-based antioxidants in a variety of food products. The goal is to protect the shelf life of products from free radical oxidation without the use of traditional synthetic food additives. Many of the synthetic additives developed in the 1950s and 1960s are now known to have adverse health effects.

- Develop products with longer shelflife
- Faster development for new formulations
- Decrease time-to-market
- Validate performance of new raw materials

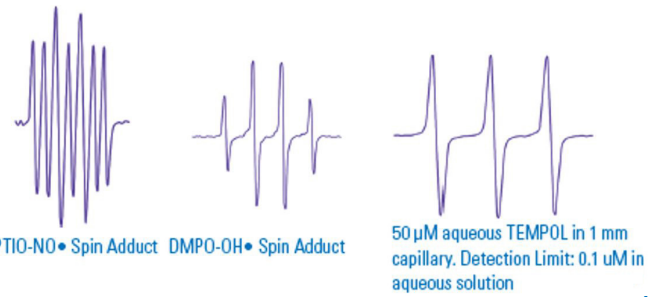
Recently, a new trend has emerged that combines culinary with science in what are referred to as "Innovation Kitchens". Here, the combination of unique new recipes made with natural healthy ingredients are created by teams of scientists and culinary experts. One aspect of these Innovation Kitchens involves testing of new formulations and recipes to optimize their shelf life. Many older test methods are still in use, but some of these require longer shelflife testing times, and hence, longer times to validate a new product for market. Electron Spin Resonance (ESR) provides a testing technique that measures free radicals formed during the oxidation of many materials including edible oils and edible oil containing food products. In many cases, the time to validate a new product's ability to resist free radical oxidation is cut in half.

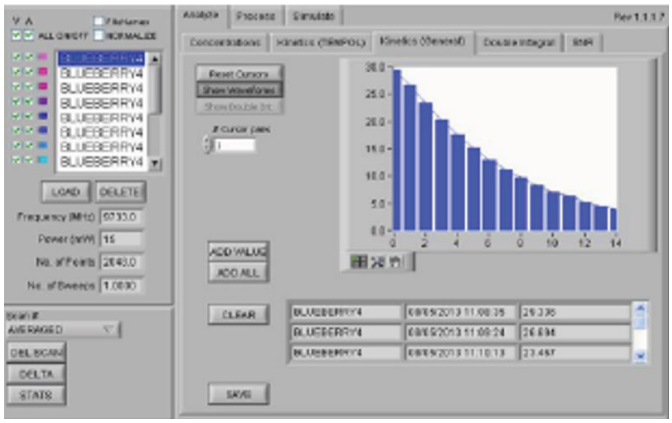
Bruker has developed a benchtop electron spin resonance instrument with automation and a software solution designed specifically for measuring free radical oxidation and shelf life in food products. The combined system and SOP provide an easy workflow for measuring oxidation profiles in food samples.

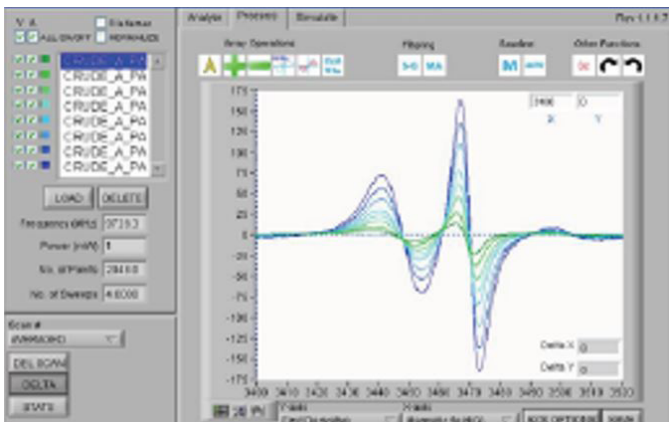
- Determine Oxidative resistance in as little as 30 minutes
- Measures free radicals instead of end products
- Includes SOP for sample preparation and analysis
- Compact lightweight with very small footprint

New SampleBench Automation

- Specifically designed for the microESR
- Provides automated, unattended use
- Fully reproducible results







microESR Technical Specifications

Specifications	
Frequency	9.6 to 9.8 GHz
Resonator	Cylindracal Dielectric
Sample Tube Diameter	Up to 5.8 mm
Sweep Range	Over 500 Gauss, centered at g=2
Supply Voltage	15 VDC (120/240 V Wall Adapter Included)
Data Interfaces	Ethernet and USB
Screen	21 cm Touch Panel display with Windows 7 Embedded DVI/HDMI/ VGA
Dimensions	30.5 x 30.5 x 30.5 cm^3
Mass Screen	10kg

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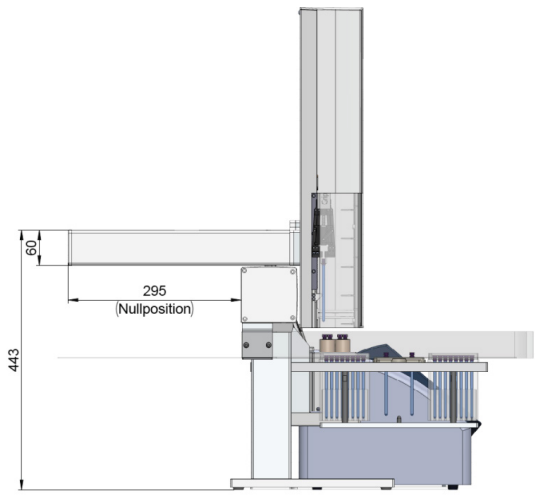
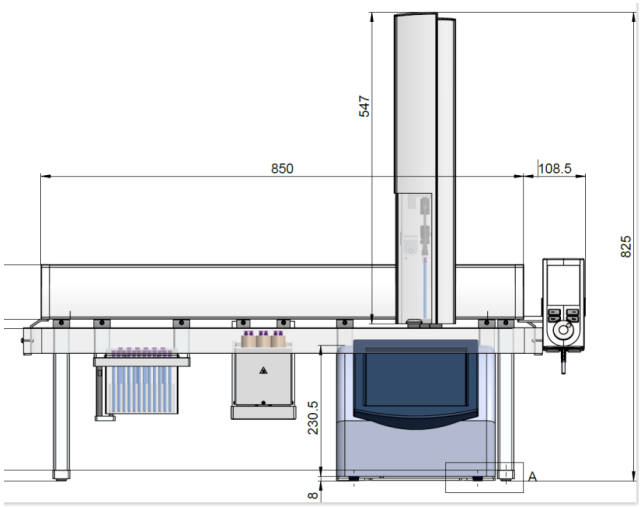
Technical data for the SampleBench	
Weights and Dimensions: Autosampler Base assembly: microESR:	30 kg x-axis 850 mm; y-axis 512 mm; z-axis 534 mm 9 kg
Input Voltage:	110V / 230V
Heater Block:	30 – 200°C
Available Tube Diameters:	O.D. 1.7 mm L x 103.5 mm O.D. 5.0 mm L 103.5 mm:
Racks (supplied):	1 x Input Sample Rack (96 position) 1 x Output Sample Rack (96 position) 1 x Calibration Sample Rack (12 position)





Bruker BioSpin

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