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AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

BACKGROUND LESS THAN 1 CPM

with the

Tracerlab

low-background beta counting system

- **Plateau slope less than 1% per 100 volts**
- **Ultimate sensitivity of 0.05 cpm**
- **Window thickness less than 1mg/cm²**

Tracerlab's new Low-Background Beta Counting System offers the ultimate in sensitivity for solid samples of beta-active materials. It is the first *complete* beta counting system ever offered commercially with a background of less than one count per minute.

This remarkably low background allows the assay of samples with very low specific activity. For instance, the CE-14 Low-Background Beta Counting System offers a sensitivity to carbon-14, a factor of 10 greater than a windowless flow counter. The sensitivity ratio is even greater for isotopes with higher energy beta radiations.

The plateau slope of less than 1% per 100 volts means unusually stable operation for periods of months or years, with excellent reproducibility of results. The central beta counters are designed for continuous gas flow to insure maximum long-term reproducibility.

The CE-14 Low-Background Beta Counting System is complete with two central flow counters and mercury isolation shield, inside a dust-tight steel cover which also houses the anticoincidence, umbrella. The massive shield, gas flow system and special three-channel anticoincidence scaler are included as an integral part of the complete system.

A detailed description of this Low-Background Beta Counting System is available. Write for bulletin CE-14.

Tracerlab KELEKET *Tracerlab*

130 High Street, Boston, Mass.
2030 Wright Ave., Richmond, Calif.

Offices in principal cities throughout the world

NOW COMMERCIALLY AVAILABLE
THE VARIAN E-P-R SPECTROMETER
(ELECTRON PARAMAGNETIC RESONANCE)

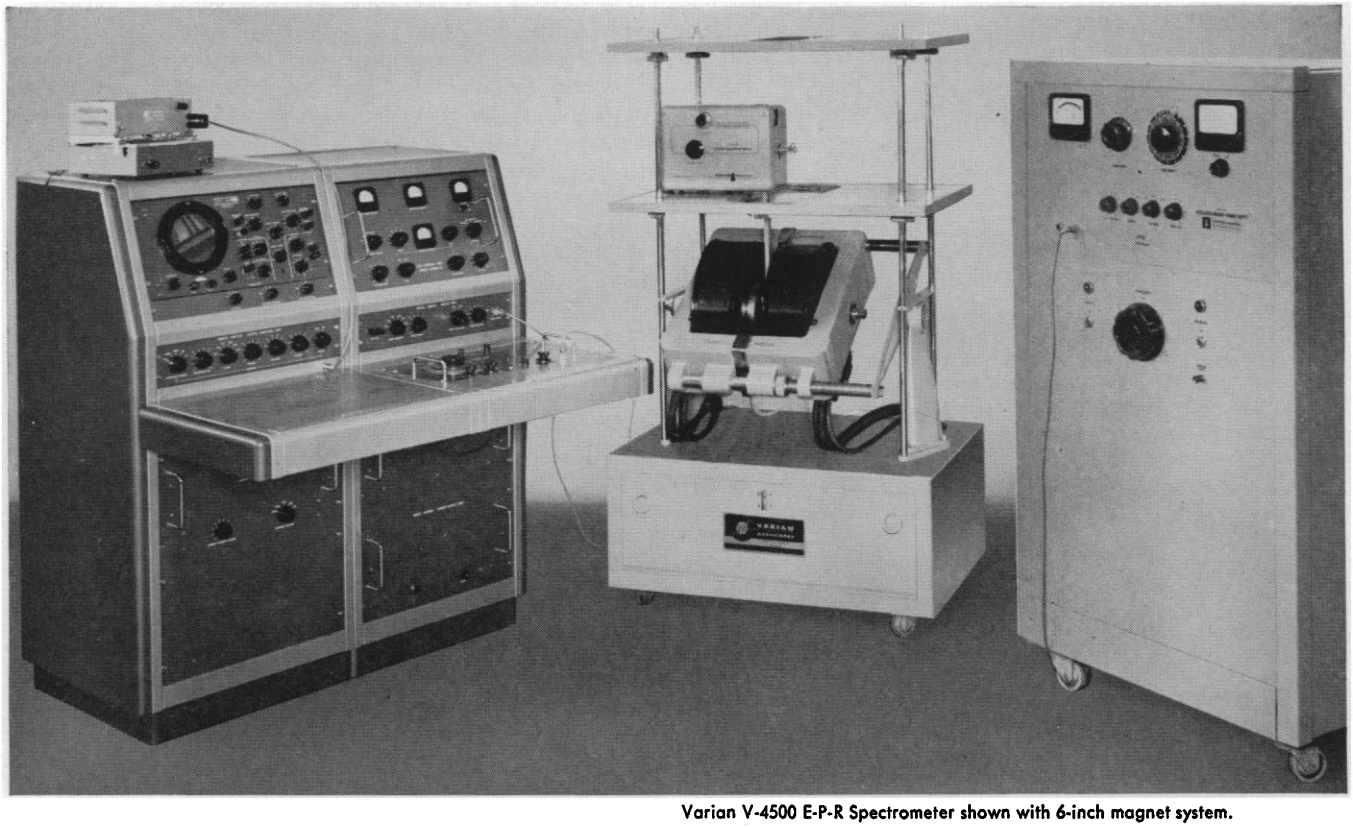
An E-P-R Spectrometer of high sensitivity is now in regular production at Varian Associates. No longer must the physicist, chemist or biologist vitally interested in use of this powerful technique expend his own time and thought on building, testing and perfecting such an instrument.

The Varian V-4500 E-P-R Spectrometer is a basic laboratory instrument capable of inducing and observing E-P-R signals from substances possessing a resultant electronic magnetic moment. Its performance is well defined. It reflects Varian's full understanding of the scientist's needs and benefits through Varian's closely related experience in fabrication of precise laboratory magnets and N-M-R (Nuclear Magnetic Resonance) Spectrometers.

E-P-R leads to the identification of: odd molecules and free radicals — bi-radicals — triplet electronic states — radiation damage sites — transition element ions — impurities in semi conductors — and color centers.

It aids in the determination of: chemical kinetics — electron exchange rates — molecular structures — microscopic electrostatic fields at transition element ion sites — characteristics of conduction band and trapped electrons in metals and semiconductors — and free radical constituents and kinetics in biochemical reactions.

Varian Associates has physicists and chemists competent to assist the scientist in applying E-P-R spectrometry to his particular field of research.



Varian V-4500 E-P-R Spectrometer shown with 6-inch magnet system.

BASIC CHARACTERISTICS OF THE V-4500

OPERATING FREQUENCY:
X-band (nominally 9.5 kmc).

FREQUENCY STABILITY:
Locked to sample cavity to better than one part in one million.

EXTRAPOLATED SENSITIVITY:
$5 \times 10^{-12} \times \Delta H$ moles of electron spins (ΔH is the full width of the absorption line in gauss at half maximum).

COMPATIBILITY:
Compatible with the detection and display components of the Varian Wide Line N-M-R Spectrometer (12-inch magnet system recommended).

Write for technical information bulletin and data sheet

watch for "THIS IS E-P-R AT WORK"
...a coming series

VARIAN associates
INSTRUMENT DIVISION
PALO ALTO 18, CALIFORNIA