



Alanine Dosimetry System

● Magnettech ESR5000

Magnettech ESR5000 is a complete alanine-EPR dosimetry system for routine dosimetry in industrial irradiation facilities, or for use as an in-house alanine reference dosimetry system.

Highest quality measurements:

The Magnettech ESR5000 instrument provides a stronger measurement response signal than any other bench-top EPR spectrometer on the market today, with higher measurement sensitivity.

Cuts measurement time in half:

The Magnettech ESR5000 EPR system reduces measurement times in half, from 40 seconds down to 10 seconds or less.

Reliability:

the new EPR spectrometer uses a solid-state technology, to provide a more rugged industrial instrument for higher reliability and uptime > 99 %.

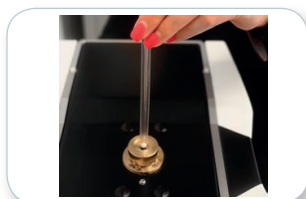
Flexibility:

Accommodates a wide variety of commercially available alanine dosimeters with specialized holders.

Remote accessibility:

IP based system allows remote operation and technical support from anywhere in the world.

Straightforward and quick measurement



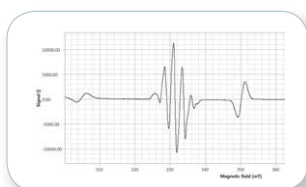
Special blister holder



Barcode reader

1. Insert the dosimeter. Barcode scan (automatic) or enter sample name (manual).
2. Click start to begin measurement.

< 10 seconds



Alanine and reference crystal

Calibration table			
Unit curr./new:	Change		
Measurement	Cal. value []	Mass [mg]	
100kGy_Dauertest_001	99560.745	0.000	
100kGy_Dauertest_002	99598.617	0.000	
100kGy_Dauertest_003	99652.814	0.000	
100kGy_Dauertest_004	99653.730	0.000	
100kGy_Dauertest_005	99638.751	0.000	
100kGy_Dauertest_006	99584.147	0.000	
100kGy_Dauertest_007	98991.236	0.000	
100kGy_Dauertest_008	99703.716	0.000	

Secured database

3. Dosimeter is measured and the dose is calculated automatically. The calculated dose is displayed and stored automatically in the secured database.

Optional: Enter the mass of the sample for mass reference.

Technical specifications

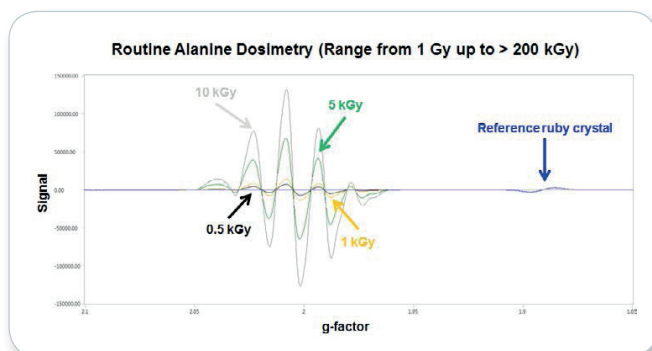
Dose range	1 Gy to 200 kGy
Dose type	alanine pellets or blisters
Dosimeter holder	blister holder (standard) and pellet holder
Barcode reader	optional
Measurement time	between 10 and 120 s depending on dose)
Internal standard	reference crystal
Measurement repeatability	± 0.1 % (25 kGy dosimeter)
Measurement reproducibility	± 0.5 % (25 kGy dosimeter)
Software	ESRStudio
Laptop or PC requirements	Windows 7 or latest, .NET Framework update, 2 Ethernet ports
Power requirements	100-250 V AC
Dimensions	391 x 262 x 192 mm
Weight	45 kg
Certification	manufactured under ISO 9001 guidelines, CE conform

Glassware and optional add ons

Packages for special sample positioning and automation are available together with a software package for spectrum treatment and precision enhancement.

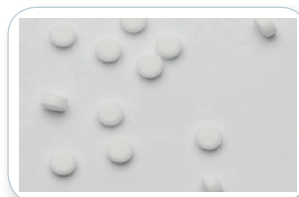
The measurement time of the Magnetech ESR5000 is very short and depends on the dose.

High dose	0.5 up to > 200 kGy	10 s, approx. 8000 readouts a day
Low dose	<1 up to 20 Gy	120 s

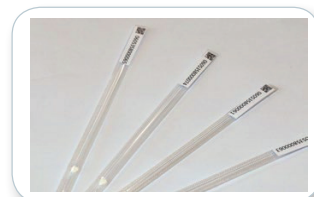


Alanine dosimeters

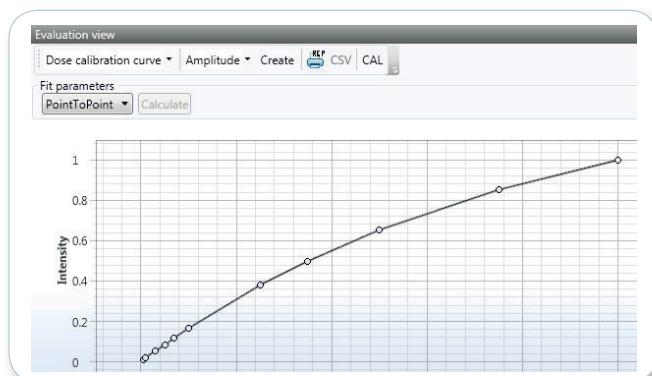
Alanine is an amino acid forming a very stable free radical when subjected to ionizing radiation. The alanine free radical yields an EPR signal that is dose dependent. The Magnetech ESR5000 EPR system is a simple, fast and accurate measurement equipment for alanine dosimetry for either pellets or blisters.



Alanine Pellets



Alanine blisters with barcode



Dose calibration curve

● Bruker BioSpin

epr.bb.io.de@bruker.com
www.bruker.com/epr