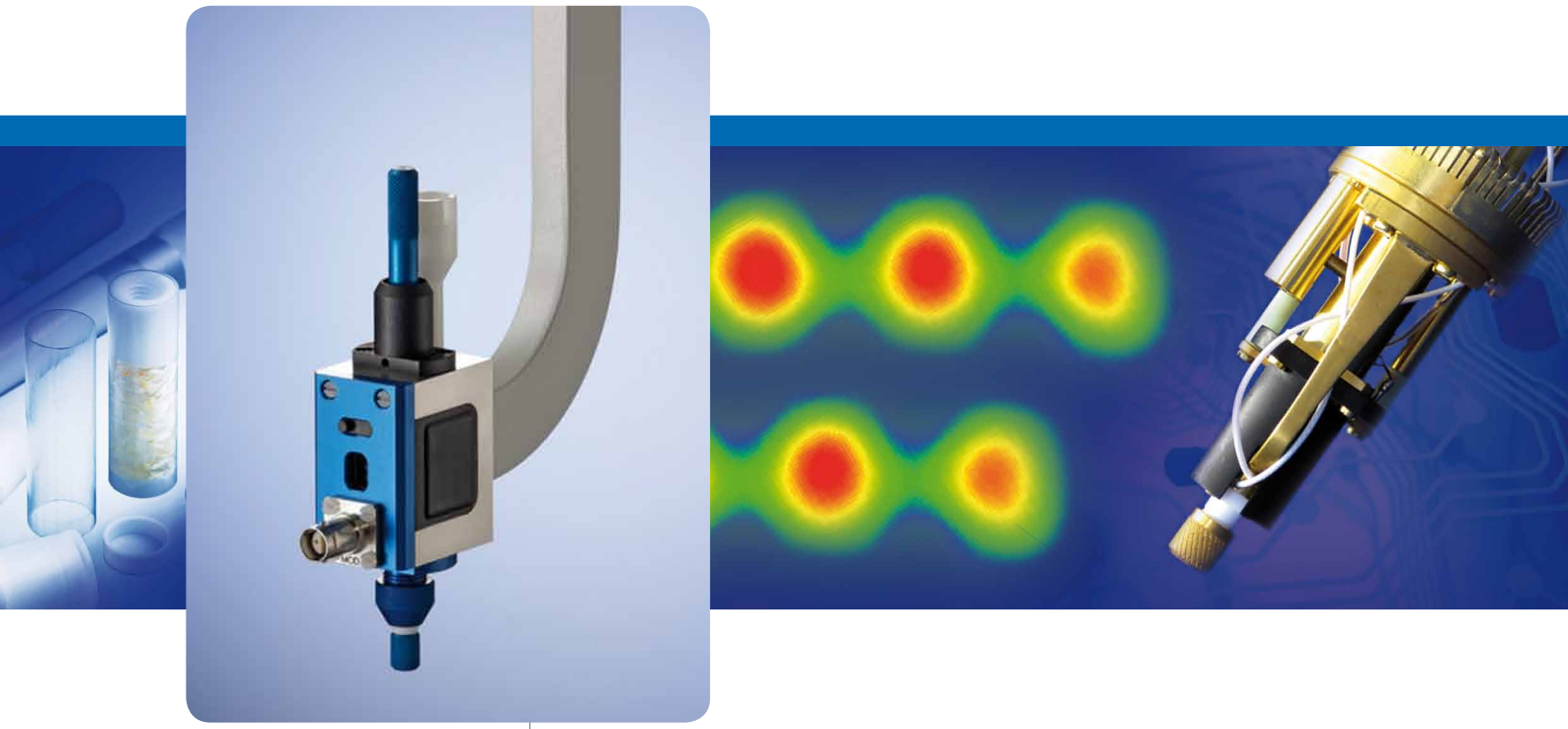
BRUKER



EPR Accessories

- The Solutions for Multiple-Choice EPR Experiments

CW / FT-EPR

Innovation with Integrity

Probeheads

ER 4115OD

It is fitted with an optical transmission path of 7x10 mm for incident light. The resonator is compatible with rotating base magnets. Minimum required magnet air gap is 61 mm. These cylindrical resonators are developed to obtain maximum sensitivity for EPR studies on samples having low dielectric losses, gas phase experiments, solid state low temperature work and flow or mixing experiments.

Specifications:

Resonance frequency:	9.87 GHz
Sample access:	20 mm
Modulation amplitudes:	9 G max at 100 kHz
Tuning/matching:	manual
Cavity width:	61 mm

ER 4104OR

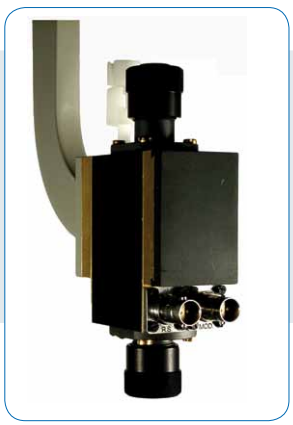
The cavity is designed for convenient optical access from the front and the rear side. The resonator allows unhindered irradiation of the sample and comes equiped with both modulation and rapid scan coils. The dimensions of the optical transmission paths are: 4x10 mm. All standard temperature control equipment can be used. The resonator is mainly used for optical detection experiments. It is also useful for intense UV-irradiation with minimum background signal.
Sensitivity is approximately 50% of a standard rectangular cavity.

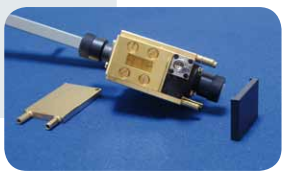
Specifications:

Resonance frequency:	9.66 GHz
Sample access:	10 mm
Modulation amplitudes:	32 G max at 100 kHz
Optical transmission:	100 %
Optical path:	4 x 10 mm
Tuning/matching:	manual
Conversion factor:	1.0 G/√W at Q_L = 3000
Cavity width:	35.4 mm

ER 4102ST

The cavity operates in the TE_{102} mode. It features a medium loaded Q value of 2500. Optical access is provided by a grid of 10 x 23 mm with 50 % transmittance. The resonator is equipped with additional rapid scan coils. All standard temperature controler equipment can be used. The ER 4102ST is a universal cavity with good performance for every class of samples. Due to the relatively low Q-factor the cavity is also suited for transient EPR. It can also be equipped with the option ER 4102ST-1004, the so-called Cooling Side Plates (CSP). With this option, EPR experiments at elevated temperatures up to 500 K become readily accessible (together with the ER 4141VT digital temperature accessory). The purpose of these pair of plates is obvious: They will provide effective cooling and dissipation of excess heat, in turn prevent and protect the cavity for any damage as a result of sample heating.





Specifications:

- Resonance frequency: 9.75 GHz
- Sample access: 10.5 mm
- Modulation amplitudes: 32 G max at 100 kHz
- Tuning/matching: automatic
- Conversion factor: 1.4 G/√W at Q_L = 2500
- Cavity width: 35.4 mm/ 40 mm with CSP

ER 4116DM

The cavity features two modes, a TE_{102} with B_1 perpendicular (Q_L = 4500) and a TE_{012} with B_1 parallel (Q_L = 4000) to B_0. With a quartz dewar inserted the operating frequencies are 9.6 GHz (perpendicular) and 9.3 GHz (parallel). Optical access is provided by a 8 mm i.d. hole on the cavity front. The weak-pitch sensitivity of this cavity is about 150 % of the ER 4102ST. The cavity is compatible with the ER 4141VT and ER 4112HV temperature control systems and is equipped with rapid scan coils. This resonator is designed for investigation of forbidden transitions in Triplets, Biradicals, Transition Metal and Rare Earth Ions. In the parallel mode the transition probability of the allowed EPR transitions goes to zero and the EPR spectrum shows only lines due to forbidden transitions.

Specifications:

- Resonance frequency: 9.6 / 9.3 GHz
- Sample access: 10 mm
- Modulation amplitudes: 10 G max at 100 kHz
- Tuning/matching: automatic
- Conversion factor: 1.3 G/√W at Q_L = 3000
- Cavity width: 45.2 mm

ER 4103TM

The ER 4103TM is a flat cylindrical cavity resonant in the TM_{110} mode. It can be used with an insert dewar / flat cell assembly for variable temperature. Special flat cell holders have been developed to center the cell in the cavity. Alternatively, the recently developed ER 4110AX AquaX cell can be used. This new sample cell is especially useful for quantitative EPR of aqueuos samples. The cavity allows optical access with 80% transmission for the incident light. Ideally suited for aqueous samples, conducting samples and tissues when sample quantity is not limited.

Specifications:

Resonance frequency:	9.8 GHz
Sample access:	11.5 mm
Modulation amplitudes:	16 G max at 100 kHz
Tuning/matching:	automatic
Cavity width:	33 mm

ER 4105DR

The ER 4105DR is a double rectangular cavity operating in the TE_{104} mode. Both chambers are equipped with modulation and rapid scan coils. The front chamber has an optical grid with 50 % transmission. The main application is determination of spin concentration and g-factor values against a reference sample. The two coupled cavites assure that both samples are measured under identical conditions, i.e. unchanged Q-factor. The cavity is not recommended for the 6“ magnet.

Specifications:

Resonance frequency:	9.7 GHz
Sample access:	10.5 mm
Modulation amplitudes:	32 G max at 100 kHz
Tuning/matching:	automatic
Conversion factor:	0.6 G/√W at Q_L = 3000
Stack separation:	42 mm
Cavity width:	35.4 mm

ER 4114HT

The ER 4114HT cavity resonates in the TE_{011} mode. The low thermal expansion coefficient results in only small resonance frequency drift due to wall heating. The three wall dewar finger system made from high purity quartz contains both the heater element and the sample holder, and is designed as a gas flow system having low temperature gradients in the sample region. It covers the temperature range from 400 K to 1200 K using the ER 4141VT-U in combination with the power booster module. The ER 4114HT is not suitable for 6“ magnets.

ER 4141VT-U

Specifications:

- Resonance frequency: 9.4-9.7 GHz
- Sample access: 4 mm
- Modulation amplitudes: 7 G max at 100 kHz
- Tuning/matching: manual
- Heat transfer gas N_2 / H_2: 92% / 8%
- Cavity width: 60.0 mm

ER 4123D

The ER 4123D features a high filling factor and a loaded Q-factor of 4000. It is equally well suited for lossy and non-lossy samples. With aqueous solution, ten times less sample volume results in the same sensitivity as with a flat cell in the ER 4102ST cavity. The B_1 of this resonator is about 3 times higher than with the ER 4102ST.
The main applications are EPR studies of samples available only in small quantities. Due to its large B_1 the resonator is especially suited for the investigation of saturation effects. Together with the TPX tubes gas exchange experiment can be carried out.

Specifications:

- Resonance frequency: 9.75 GHz
- Sample access: 5 mm
- Modulation amplitudes: 32 G max at 100 kHz
- Tuning/matching: automatic
- Conversion factor: 1.0 G/√W at Q_L = 3000
- Cavity width: 30.0 mm
- volume for aqueous solutions: 15 µl
- equiped with TPX tubes:

ER 4108TMHS

The ER 4108TMHS is a flat cylindrical cavity resonant in the TM_{110} mode with a nominal center frequency of 9.8 GHz and a loaded Q of 3500. The direction of B_1 is along the sample tube axis. The high B_1 value makes this cavity especially useful for saturation studies. For magnet set ups with only little free space in the air gap this is the ideal cavity.

Specifications:

- Resonance frequency: 9.8 GHz
- Sample access: 10.5 mm
- Modulation amplitudes: 15 G max at 100 kHz
- Tuning/matching: automatic
- Cavity width: 23 mm

EN 801

The ENDOR resonators is broad band and therefore also capable of performing TRIPLE experiments. It is compatible with the ER 4141VT and the ER 4112HV temperature controlers. The resonator is applicable to liquids, powders and single crystals.

Specifications:

- Resonance frequency: 9.6 GHz
- Sample access: 5 mm
- Modulation amplitudes: 6 G max at 20 kHz
- Tuning/matching: manual
- Conversion factor: 3.5 G/√W at Q_L = 800-1500
- Resonator width: 48 mm

ER 4118 Flexline Series

The flexline resonators are characterized by their high filling factor resulting in maximum sensitivity and high B_1. For the X-Band FT-EPR resonators (MD5 and MS5/3) the high filling factors are complemented by a low dead-time (< 80 ns) and variable Q-factors. In low-Q operation bandwidths of up to 1000 MHz are achieved. Easy sample exchange is maintained at all operating temperatures. The X-Band resonators have been designed for FT-EPR and transient EPR experiments. Additional modulation coils allow CW operation and easy change between FT- and CW-EPR. For L-Band the resonators are recommended if the available sample volume is limited or large B_1 is required for saturation experiments.

Specifications:

- ER 4118X-MD-5
- Resonance frequency: 9.75 GHz
- Sample access: 5 mm
- Modulation amplitudes: 20 G max at 100 kHz
- Tuning/matching: manual
- Conversion factor: 4.2 G/√W at Q_L = 4000
  1 G/√W at Q_L = 150
- Cavity width: 40 mm

- Dielectric resonator, 5 mm, one window
  ER 4118X-MD-5W1
- Split ring resonator, 3 mm
  ER 4118X-MS-3
- Split ring resonator, 3 mm, one window
  ER 4118X-MS-3W1
- Split ring resonator, 5 mm
  ER 4118X-MS-5
- Split ring resonator, 5 mm, one window
  ER 4118X-MS-5W1
- Split ring, L-Band, 5 mm
  ER 4118L-MS-5
- Split ring, S-Band, 5 mm
  ER 4118S-MS-5
- Pulsed ENDOR resonator, one window
  EN 4118X-MD4W1*

*only available for ESP 360D-P, E 560D-P and E 680D-P

- ER 4118X-MS-5/3
- Resonance frequency: 9.75 GHz
- Sample access: 5 mm/3 mm
- Modulation amplitudes: 10 G at 100 kHz
- Tuning/matching: manual
- Conversion factor (MS5): 2 G/√W at Q_L = 500
  (MS3): 4 G/√W at Q_L = 500
- Cavity width: 40 mm

- ER 4118L/S-MS-5
- Resonance frequency: 1 GHz, 4 GHz
- Sample access: 5 mm
- Modulation amplitudes: 1 G max at 100 kHz
- Tuning/matching: manual
- Cavity width: 40 mm

EN 4118X-MD4

The pulsed ENDOR resonator EN 4118X-MD4 of the Flexline series has been designed to provide constant sensitivity over a large frequency range with the E 560D-P DICE-II pulsed ENDOR accessory. Optimization of the ENDOR signal is thereby greatly simplified and automated multiple dimension experiments become feasible. The resonator provides easy sample exchange, at any temperature, a maximum sample diameter of 4 mm, and comes with an optical window.
The EN 4118X-MD4 resonator is compatible to the variable temperature units (ER 4118 CF and ER 4118CV).

Specifications:

- Resonance frequency: 9.7 GHz
- Sample access: 4 mm
- Modulation amplitudes: 20 G max at 100 kHz
- Tuning/matching: manual
- Conversion factor: 1 G/√W at Q_L = 150
- Resonator width: 40 mm

ER 5102D2 / EN 5102D2

A specific design of the Q-Band resonator for pulse EPR has resulted in a drastic improvement in sensitivity and ease of handling. Pulse Q-Band offers unique advantages compared to pulse X-band. In addition to the improved g-factor resolution, Q-Band offers an increased resolution of different nuclei in ESEEM and ENDOR spectra, an increased sensitivity for small sample sizes and an increased sensitivity for distance determinations with the 4-pulse DEER sequence. The EN 5107D2 Q-Band ENDOR resonator and the ER 5107D2 Q-Band resonator is a fixed frequency resonator designed for optimum pulsed Q-Band operation. The resonator Q-factor can be varied continuously as determined by the experimental task, critical coupling for CW experiments and over coupling for general pulse experiments. An optical window allows further versatility by providing for sample irradiation with better than 90% optical transparency from 200 nm to 5 µm.

Specifications:

- Resonance frequency: 34 GHz
- Sample access: 2 mm
- Modulation amplitudes: 5 G max at 100 kHz
- Tuning/matching: manual

E 600-1021H / EN 680-1021H TeraFlex

The E 600-1021H TeraFlex® W-Band EPR-Resonator constitutes the standard resonator of the ELEXSYS E 600/E 680 Series.The intended use of the EPR-resonator is CW-EPR and FT-EPR at 94 GHz. The EN 680-1021H TeraFlex® W-Band Pulsed ENDOR-Resonator has the same geometrical dimensions as the E 600-1021H TeraFlex® W-Band EPR-Resonator. Both probeheads feature a cylindrical resonator. The probehead are equipped with mechanical tunning and matching gears.

Specifications

■ Resonance Frequency (empty):	94 GHz nominal
■ Max. Sample Access:	0.9 mm o.d.
■ Max. Modulation Amplitude:	20 G at 100 KHz
■ Sample Temperature Range:	4 K to room temperature
■ Max. Average ENDOR Power:	20 W
■ Max. Peak ENDOR Power:	250 W
■ Max. ENDOR Pulse Length:	100 µs

263 GHz single mode EPR/ENDOR Resonator

The single mode resonator is designed for small samples. Equipped with modulation and ENDOR coils the resonator can be used for CW- and Pulse-EPR and for pulse-ENDOR applications. The maximum sample tube diameter is 0.35 mm and a $\pi/2$ pulse length of 50 ns is achieved.

Specifications:

- 50 ns $\pi/2$ pulse
- 0.35 mm OD Sample tube
- Reflection mode
- Variable temperature 3.8 - 300 K

263 GHz large sample volume non-resonant probe

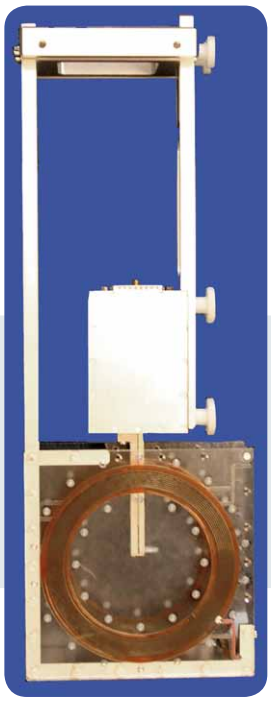
The matched non-resonant probe can be operated in reflection and induction mode. This probe is designed for large samples and accommodates sample tubes with up to 5 mm diameter. With the available power at 263 GHz a field strength of 180 mG is achieved. The non-resonant probehead can be used for CW- and Pulse-EPR applications and it is equipped with optical fibres for light irradiation of the sample.

Specifications:

- Up to 5 mm sample diameter
- Easy sample handling
- Refection and induction mode
- Variable temperature 3.8 - 300 K

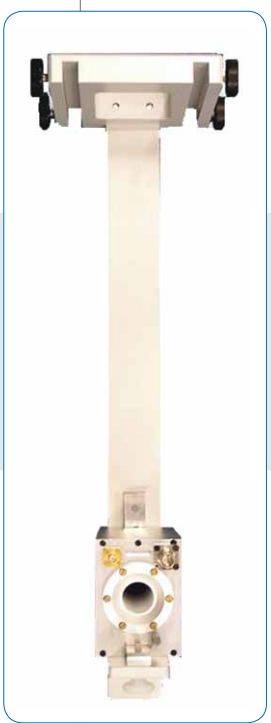
E 540SC

The E 540SC L-band surface coil is suited for performing localized spectroscopy of EPR species located within ± 5 mm (axially) from the center of the surface coil. The EPR signal can be monitored in a non-invasive manner to monitor local radical decomposition over time, changes in local oxygen concentration, or identify regions of radical accumulation.
The E 540SC L-band surface coil design for use with the automatic matching control (AMC) in the ELEXSYS L-Band bridge. The AMC maintains correct matching to compensate for sample movement during spectrum collection.



Specifications:

Resonance frequency:	1.1 GHz
Sample access:	8 mm
Modulation amplitudes:	2 G max at 100 kHz
Tuning/matching:	automatic
Resonator width:	59 mm



E 540R23/36

The E 540R36 is the resonator of choice when studying lossy samples such as large volume aqueous solutions, biological tissue or small laboratory animals at L-Band. Its revolutionary design results in a high tolerance to changes in loading and a strong B_1 field of excellent homogeneity over a large sensitive volume. In combination with a new concept in field modulation coil design, the highest possible sensitivity is obtained. The resonator has a free access diameter of 36 mm suitable for small animals (mice and rats) or 23 mm for the E 540R23 suitable for small animals (mice) and is open at both ends.

Specifications:

Resonance frequency:	1.1 GHz
Sample access:	36 mm / 23 mm
Modulation amplitudes:	3 G max at 100 kHz; 10 G max at 10 kHz
Connection:	Twinkoax
Tuning/matching:	manual

Sample Conditioning Accessories

Manual Control Goniometer ER 218G1

The ER 218G1 is a manual control goniometer with a vernier caliper to accurately set the rotation angle. A modified version of this manual control goniometer is compatible with the Flexline series of resonators.
The ER 218G1 is compatible with the temperature controller systems ER 4112HV and ER 4141VT as well.

The Programmable Goniometer ER 218PG1

The ER 218PG1 Programmable Goniometer has been designed to simplify and speed-up measuring EPR spectra of single crystals as a function of their angular position in the magnetic field with high precisssion. The goniometer uses a computer controlled stepper motor to position the sample with an angular resolution of 0.125 degree and a reproducibility of 0.5 degrees, independent of the direction of rotation. The sample tube or quartz rod is inserted and locked in a special keyed holder which then fits onto the goniometer in a reproducible position. To ensure that the crystal does not wobble excessively during rotation, the sample tube is supported at two positions in the holder. The ER 218PG1 is compatible with the temperature controller systems ER 4112HV and ER 4141VT.

Liquid Autosampler System

Many routine applications only involve a simple intensity measurement from a particular EPR signal. However, these applications also employ large sample sets and require high throughput. The ER 4110AS-SET combined with automated intensity measurement provide programmable, „high-throughput" sample handling for applications using liquid samples. The acquisition of shelf life prediction data in beer provides an example.

ER 203UV Irradiation System

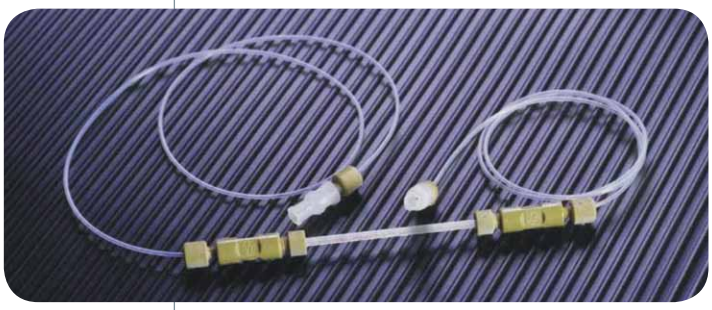
This UV Irradiation System provides the possibility for in-situ irradiation of the sample of interest in the microwave cavity. The main aim is to produce paramagnetic compounds via continous light irradiation.Optionally a chopper and shutter are available for double modulation techniques.

The UV irradiation system features:

- 100 W mercury lamp
- 200 - 2000 nm wave length range
- focusing unit

Optionally:

- Shutter,
- Chopper,
- light guide



AquaX

AquaX is a multiple-bore design of closely spaced capillaries. Its main advantages are:

- Much higher sensitivity as compared to capillary as well as to flat- cell (19-bore AquaX version)
- High reproducibility, ideal for quantitative measurements
- Continous flow measurements possible
- Easy filling and rinsing
- Compatible with all standard cavities, like ER 4122SHQ and the ER 4103TM
- Easy mounting to the cavity
- No special holders required
- No additional adjustment of the AquaX cell
- Made out of chemically resistant materials
- Standard fittings provided

Available in 4- and 19-bore design:

- AquaX4 with 18 µl/cm
- AquaX19 with 30 µl/cm

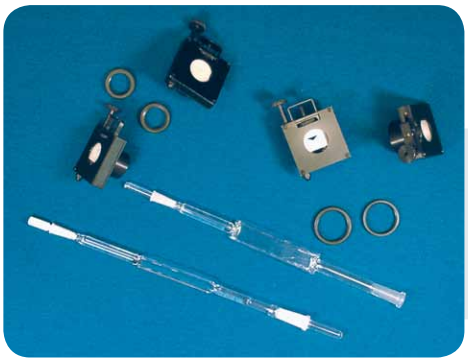
Sample Tubes

High quality sample tubes are essential for background free EPR spectra. Precision tubes are available with different diameters to match the sample volume and resonator size.

ER 221TUB/2, 3, 4 CFQ quality sample tubes with 2, 3 and 4 mm I.D.
ER 221TUB-Q10 Q-Band sample tubes with 1 mm I.D.
E 600-ST9S W-Band sample tubes with 0.5 mm I.D.

E 4100MK

The Bruker patented Marker Accessory
The single line marker with g-factor of 1.98 is of particular value for both precise field determination and as a signal amplitude standard.



Flat Cell Equipment

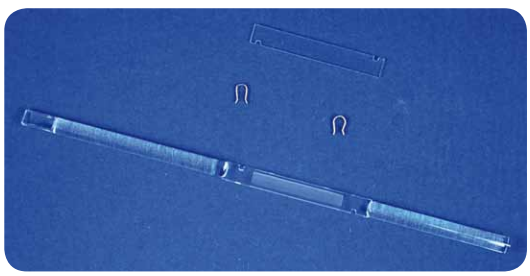
Flat cells are used for liquids with dielectric loss in X-Band cavities. The ER 160 FC-Q aqueous solution cell for room temperature measurements can be used in combination with the ER 4102ST, the EMX and ELEXSYS standard cavities.

Accurate positioning of the flat cell is achieved by the ER 174 FCH flat cell holder.

The ER 165 FCVT-Q aqueous solution cell is used in combination with the variable nitrogen temperature controler.

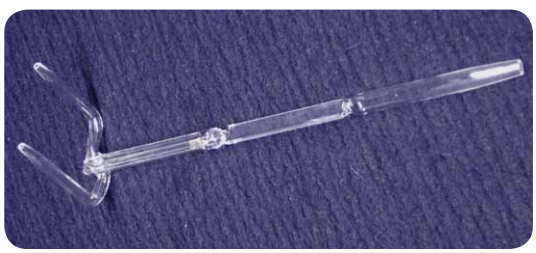
ER 221TPX

The TPX capillaries are used for gas exchange experiments with aqueous solutions, ideally in combination with the ER 4123D resonator. This setup is best suited for limited sample quantity as only 3 µl sample volume is required.



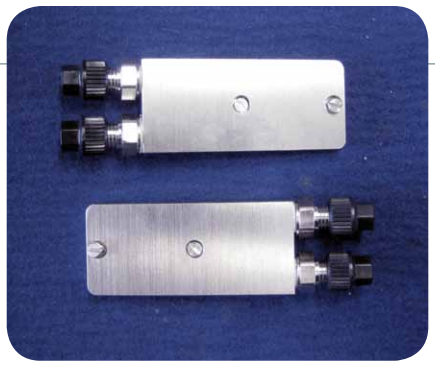
ER 162 TC-Q Tissue cell

EPR Sample Cell for tissue samples.
Tissue cavity dimensions: 23 mm x 7 mm x 0.5 mm.
Overall dimensions 50 mm long, 2 mm thick and 10 mm wide.



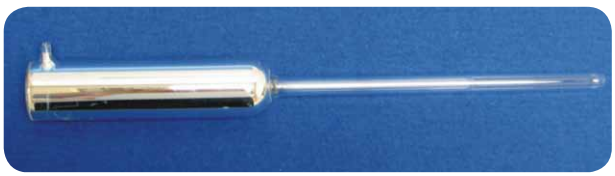
ER 163 MC Mixing Cell

EPR flow Cell for short Lived samples.
The sample is 0.25 mm in these cells translates to a thrifty 125 µl sample volume. Only 50 µl of your sample is needed to fill the flow tubes. The flow tubes are 130 mm long and suppoprt flows from 4-15 ml/ sec.



ER 4122SHQE-1004

With the cooling side plates, EPR experiments with the ER 4119HS or the ER 4122SHQE at elevated temperatures up to 600 K become readily accessible (together with the ER 4141VT digital temperature accessory). The purpose of the plates is to provide effective cooling and dissipation of excess heat, to in turn prevent and protect the cavity for any damage as a result of sample heating. The cavity also features an irradiation grid and is compatible with a range of accessories and options.



ER 167 FDS-Q Finger dewar

For particular applications, like detection of nitroxide (NO), the nitrogen finger dewar, ER 167 FDS-Q, is the method of choice. The finger dewar minimizes sample preparation time and experimental set-up. The sample temperature is at 77 K.

ER 164 EC-Q Electrolytic Cell Assembly

For producing positive and negative ions during EPR measurements, comprising flat cell, electrode reservoir, platinum and calomel electrodes.

ER 4141VT

The Digital Temperature Control System, ER 4141VT, makes use of liquid or gaseous nitrogen as coolant. The accessible temperature range is 100 K to 500 K. The base system consists of the following parts:

- Quartz Dewar
- ER 169DIS Dewar Insert Holder
- Digital Temperature and Gas Flow Control Unit
- Thermocouple
- Metal Transferline
- 25 L storage dewar
- Nitrogen Evaporator Heater Assembly

With the dewar insert holder, the dewar is mounted to an X-Band waveguide-type cavity. The sample is inserted into the quartz dewar. Sample exchange at any temperature is a standard feature of this system. The digital control unit monitors and controls the temperature measured with the thermocouple close to sample's position. The target temperature is reached and stabilized via PID temperature control (proportional, integral and derivative). The control unit is fully remote controlable via the acquisition software Xepr or WinEPR Acquisition of the ELEXSYS and EMX spectrometer series.

ER 4112HV

The low temperature control system, ER 4112HV, makes use of liquid helium as coolant. The accessible temperature range is 3.8 K to 300 K (1.8-300 K optional).
The system consists of the following parts:

- Continuous Flow Liquid Helium Cryostat with 10 mm o.d.
- Quartz Dewar
- Sample Holder
- Digital Helium Control Unit
- Liquid Helium Flow Controller
- Helium Transfer Line
- Helium Pump
- Tubing Clamps for attaching the cryostat to the magnet

Sample exchange at any temperature is a standard feature of this system. The digital helium control unit monitors and controls the temperature measured with a thermosensor close to sample's position. It features PID temperature control. The control unit is fully remote controlable via the acquisition software Xepr or WinEPR Acquisition of the ELEXSYS and EMX spectrometer series.

ER 4118 CV Glass

ER 4118 CV Metal

The ER 4118CV

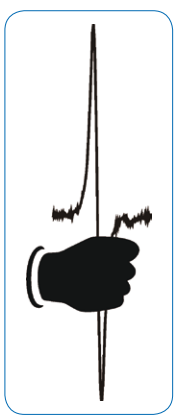
The ER 4118CV series of dewars seamlessly operate with the ER 4141VT digital temperature control systems. They are the choice for nitrogen-based temperature experiments on our Flexline series and Q-Band resonators. The ER 4118CV are available as glass or metal dewar with window.

The ER 4118CF

The ER 4118CF series of cryostats are the ideal match for Bruker BioSpin's range of Flexline Resonators, Q- and K-Band Resonators. The resonator and the sample are both inserted into the cryostat. By design, the sample can be removed and exchanged with ease throughout the 3.8 K - 300 K temperature range.

ER 036TM Teslameter

Real FT-NMR for the utmost precision in magnetic field measurements. 1.5 - 15 kG with 1 mG resolution.



ER 4113HV-1021 Vacuum Pump Station

Bruker BioSpin also offers a Vacuum Pump Station to provide you with a complete solution for your liquid Helium-based temperature measurements. Ask us or your Bruker BioSpin representative for further information or options.

ER 033D Digital Lock

The digital successor of the FF-lock. Rock-solid field/frequency stability from 1.5 kG to 15 kG (ELEXSYS only). ER 036TM Teslameter required.

E 600-1023LR W-Band Light Fiber/Radiation Shield Sample Rod

E5106220 X-, Q-Band Light Fiber Sample Rod

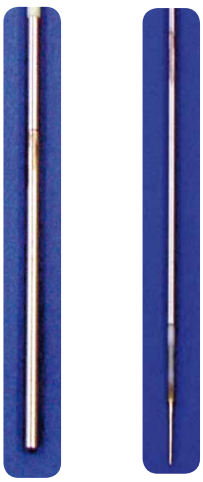
The sample rod contains a fiber optic light guide which runs the full length of the sample rod to deliver light directly to the sample tube. The position of the light fiber is adjustable to accommodate variations in sample tube lengths. The top of the sample rod features a male F-SMA connector for the interconnection of the sample rod light fiber and an external light fiber.

The sample rod is equipped for ease of operation with precooled resonators. An O-ring closure at the top of the sample rod allows for flushing of the interior to prevent air and water being introduced into the cryostat. In addition a radiation shield is integrated into the sample rod construction to prevent rapid thawing of frozen samples during introduction into the W-band probe.

Light Fiber Transmission:	Frequency / nm	Transmission / dB m-1
	248	1.1
	308	0.27
	488	0.013
	515	0.014
	532	0.013
	647	
	850	0.13

E 600-1022R W-Band Radiation Shield Sample Rod

When transferring frozen samples from storage to a precooled resonator, a high risk of spoiling the sample exists due to rapid thawing which can occur. To reduce this risk, the lower portion of this sample rod features a retractable metal radiation shield. When cooled to the same temperature as the frozen sample, the radiation shield prevents rapid thawing and facilitates sample transfer. The radiation shield retracts to allow sample introduction into the resonator without interference.



Imaging Accessories

Biomedical research and material science applications by EPR imaging is a rapidly growing field. Bruker´s response to this development is the E 540 imaging accessory. Based on the proven ELEXSYS architecture, this instrument operates at L- or X-Band and proviedes the seamless integration of imagimg techniques into EPR spectroscopy.

High power gradient accessory for X-Band imaging

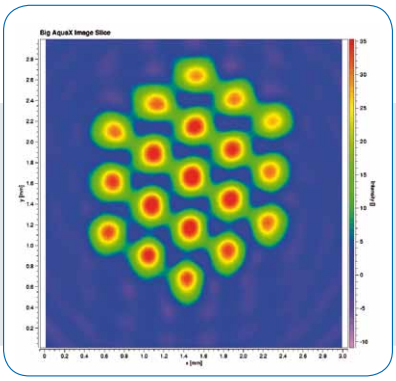
E 540 GCX2:

- 2D Gradients with 200 G/cm
- Compatible with ER 073 magnet
- 25 mm air gap
- ER 4108TMHS resonator
- Compatible with ER 4112HV Helium system

Imaging accessory for biomedical application

E 540GCL

3D Gradients with 40 G/cm
for imaging in L- and X-Band



AquaX

2D image of a 19-bore AquaX filled with a Trytil solution, recorded at X-Band with 40 G/cm gradients

Multi-Frequency Microwave Systems

Bruker's commercial Multi-Frequency EPR covers both CW-EPR and FT-EPR. As an accessory a second frequency can be added to all X-Band CW or FT systems.

For the FT-systems the L-, S-, Q- and W-Band accessories are based on the Bruker IF concept and are driven by the CW/FT X-Band bridge.

SuperQ-FT

Expand for state-of-the-art multi-frequency experiments at 34 ± 0. 8 GHz.
The perfect match to the SuperQ-FT microwave bridge is the dedicated Q-Band resonator EN 5107D2 with premium pulse EPR and ENDOR capabilities.

SuperS-FT

CW and Pulsed EPR at S-Band (3.4-3.8 GHz)
Flexline split ring, S-Band, 5 mm ER 4118S-MS-5

SuperL-FT

CW and Pulsed EPR at L-Band (0.8 – 1.4 GHz)
Flexline Resonator split ring, L-Band, 5 mm ER 4118L-MS-5

CW-EPR bridges for EMXmicro, EMXplus and ELEXSYS E 500

ER 051Q 34 GHz bridge
ER 5106QT-W/E Q-Band resonator with window or ENDOR coil

ER 065K, 24 GHz bridge
ER 6506KT K-Band resonator

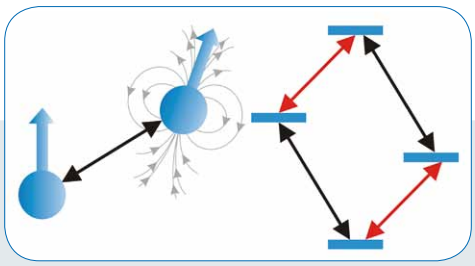
ER 061S, 3.4 – 3.8 GHz bridge
ER 4118S-MS5 split ring resonator

ER 065L, 0.8 – 1.4 GHz L-Band bridge
ER 4118L-MS5 split ring resonator

Multi-Resonance Accessories

Additional MW and RF frequencies for pulse EPR

Multi-resonance pulse EPR techniques utilize pulses (RF or MW) at different frequencies to generate resonances between the unpaired electrons and other nuclei / unpaired electrons. Bruker BioSpin offers several solutions to achieve these mixed frequency pulses.



Electron-Electron Double Resonance (ELDOR)

Unit: E 580-400
Distance determination is the key application of Pulsed ELDOR. Bruker supports this rapidly growing field with the introduction of the ELDOR Unit E 580-400. It is fully software-controlled and back-compatible to all ELEXSYS E 580 and E 680 spectrometers.

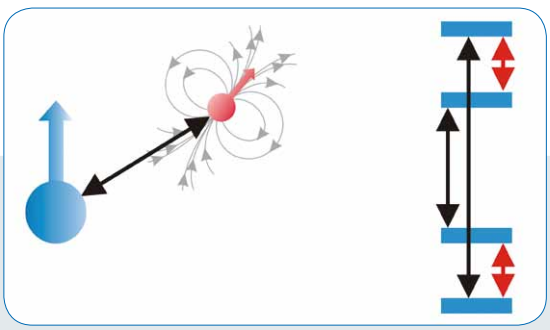
Electron-Nuclear-Double-Resonance (ENDOR)

The ELEXSYS E 560 DICE-II ENDOR/TRIPLE System: From CW-ENDOR to very advanced Pulsed ENDOR techniques.

The ELEXSYS DICE-II ENDOR systems provide the sound basis for state-of-the-art ENDOR spectroscopy by virtue of the DICE technology. DICE is the abbreviation for Digitally Computed Excitation offering FM, AM, FSK (Frequency Shift Keying) or field modulation and utilizing the Direct Digital Synthesis (DDS) concept for the E 560D-P Pulsed ENDOR accessory. The DICE-II covers a frequency range from 1 to 650 MHz in two bands. Various amplifiers can be combined with the RF unit to achieve optimum performance for the desired field of application.

CW-ENDOR resonators are available for X-Band and Q-Band for variable temperature operation

Pulse-ENDOR resonators are available for X-, Q- and W-Band and at 263 GHz for variable temperature operation.



Bruker, your Solution Partner

Bruker provides a world class, market-leading range of analytical solutions for your life and materials science needs.

Our ongoing efforts and considerable investment in research and development illustrates our long-term commitment to technological innovation on behalf of our customers. With more than 50 years of experience meeting the professional scientific sector's needs across a range of disciplines, Bruker has built an enviable rapport with the scientific community and various specialist fields through understanding specific demand, and providing attentive and responsive service.

Our solution-oriented approach enables us to work closely with you to further establish your specific needs and determine the relevant solution package from our comprehensive range of instruments, or even collaborate with you on new developments.

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