

OPTURASPY

Bio-reflectance sensor



ABER





Continuing to raise the bar...

ABER's gold standard biomass monitoring technology and expertise has expanded. Building on our industry leading capacitance technology, the ABER OPTURA brings you the untapped potential that lies with bio-reflectance measurements.

Our new patented bio-reflectance technology bring optical measurements back to the forefront of real-time bioprocess monitoring.

The ABER OPTURA SPY Sensors are designed for consistency across a range of applications and measuring environments, providing continuity of measurement and adding value to your process from lab to cGMP.

Utilising the same patented biomass monitoring technology seen in AMBR 15 & 250 ml SUF systems.

At the speed of light

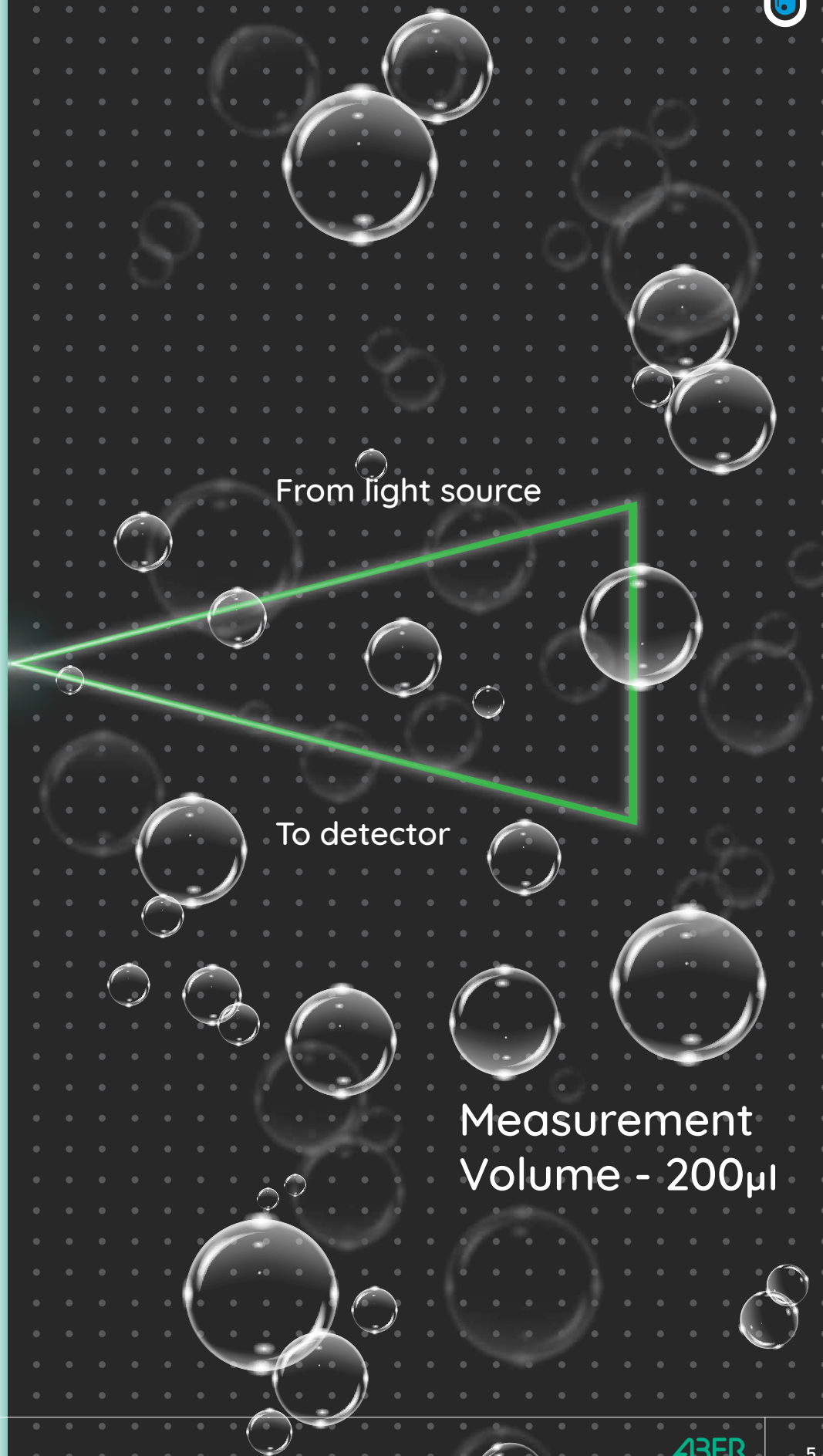
No more waiting, wasting or assays with OPTURA. Our patented bio-reflectance technology utilises single wave-length optical reflectance to bring you, live biomass trends, in real-time. The bio-reflectance sensor emits near-infrared (NIR) light from the sensor into the medium, this light is reflected by cells present in the media and returns to the detector on the sensor face, the detected light intensity is directly proportional to total cell density.

The precise NIR wavelength utilised has been selected to provide optimal sensitivity from seeding to harvest cell concentrations. This optimisation allows the consistent monitoring of biomass without needing to change the wavelength in response to varying cell densities while maintaining accuracy.

OPTURA bio-reflectance technology utilises a unique, patented bubble filter algorithm. The bubble filter allows the technology to remove reflectance signals generated by bubbles in a reactor which can falsely be recorded as biomass leading to inaccurate readings as seen in traditional optical measurements. This bubble filter allows the OPTURA technology to provide a consistent biomass readings across a range of gaseous flow rates.

Look beyond the reactor with OPTURA, the flexible format and low detection limits open up possibilities for the application of ABER OPTURA. Fix the OPTURA SPY to process tubing to expand your PAT use to recirculation loops in perfusion processes or downstream applications. Contact our expert team to discuss your application.

- Real-time process data
- Deepened process knowledge
- Automate feed strategies
- No wasted sample volume
- Contamination free
- Accurate
- No impacts from variable gas flow
- Simple set up
- Easy calibration
- Save time in the lab
- Easy to use analysis software
- Reduce foot flow in the lab



Not just any optical technology

Our bio-reflectance sensors have a highly linear biomass range spanning over 4 orders of magnitude in cell concentration. Don't make things harder than they need to be when you can use a single OPTURA sensor to monitor your fermentation from seed to harvest.

ABER OPTURA will bring value to your process, whatever the application, bringing you out of the darkness with real-time, reliable data. Use data to deepen your process knowledge and detect and correct the onset of process variation in real-time.



Key benefits

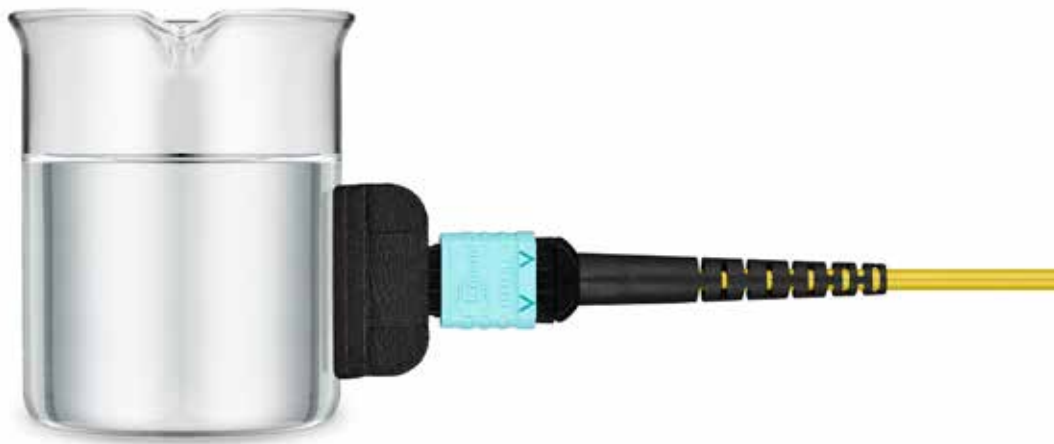
Our patent bubble filter technology allows the OPTURA SPY and Scope sensors to give consistent biomass readings in the face of varying gas flow rates.

Increase efficiency, reliability and speed to market by using data driven process development and feed strategies.

ABER OPTURA provides the actionable cell density data needed for a bioprocess 4.0 solution.



The OPTURASPY



OPTURA SPY brings our **contact free** readings to a format fit for most transparent surfaces, stick on your SPY adapter and start monitoring cells. The OPTURA SPY can be utilised in all areas from mounted on benchtop reactors to fixed to tubing in recirculation loops or downstream processing, the SPY is truly adaptable and transferable.





OPTURASPY

OPTURA SPY is a highly flexible, continuous online biomass monitor. Collect real time data with a non-contact sensor, remove the need for sampling and contamination.

Apply the SPY vessel adapter to a clear wall, plug in your SPY sensor and start to measure the cells within. You decide how and where to use the SPY sensor, the flexible format makes this sensor suitable for use from the lab right through to GMP manufacturing.

Don't limit your use to the bioreactor, OPTURA SPY format is perfectly suited to a host of applications from tubing to bench top reactors and bags.

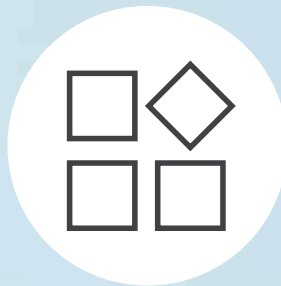
Key benefits:

- Real-time, online, non-contact cell density readings
- Broad range of applications
- Online monitoring in; microreactors AMBR 15 & 250, benchtop reactors, bags, any clear wall up to 4.3mm thick
- Suitable for use from lab through to GMP application
- Downstream capabilities on tubing etc
- Monitor trends of biomass

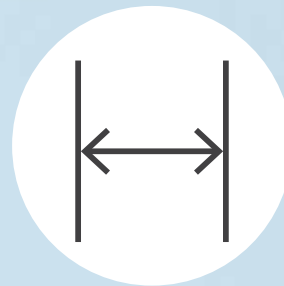
Benefits at a glance:



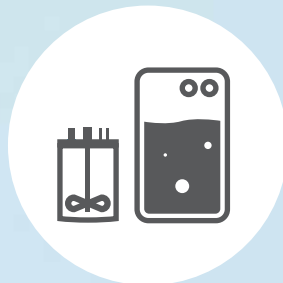
Real-time,
online



Broad range of
applications



Contactless



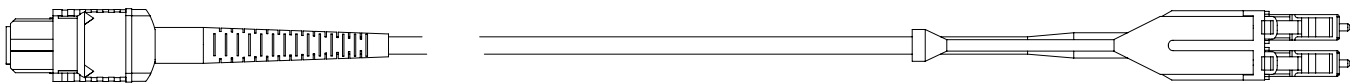
Range of bioreactors
from benchtop to bags



Monitor trends
of biomass

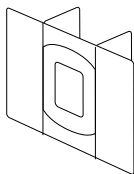
OPTURASPY

Product specification

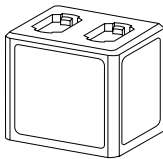


Part Number	Description	Vessel wall thickness specification	Cable length
8500-06	OPTURA SPY Type A	0.2 - 1.1 mm	2m
8500-07	OPTURA SPY Type B	1.1 - 2.3 mm	2m
8500-08	OPTURA SPY Type C	2.3 - 3.3 mm	2m
8500-09	OPTURA SPY Type D	3.3 - 4.3 mm	2m
8500-29	OPTURA SPY TF	For use with Thermo SUB Optical port	2m

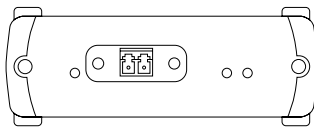
Vessel adaptor



Verification standard



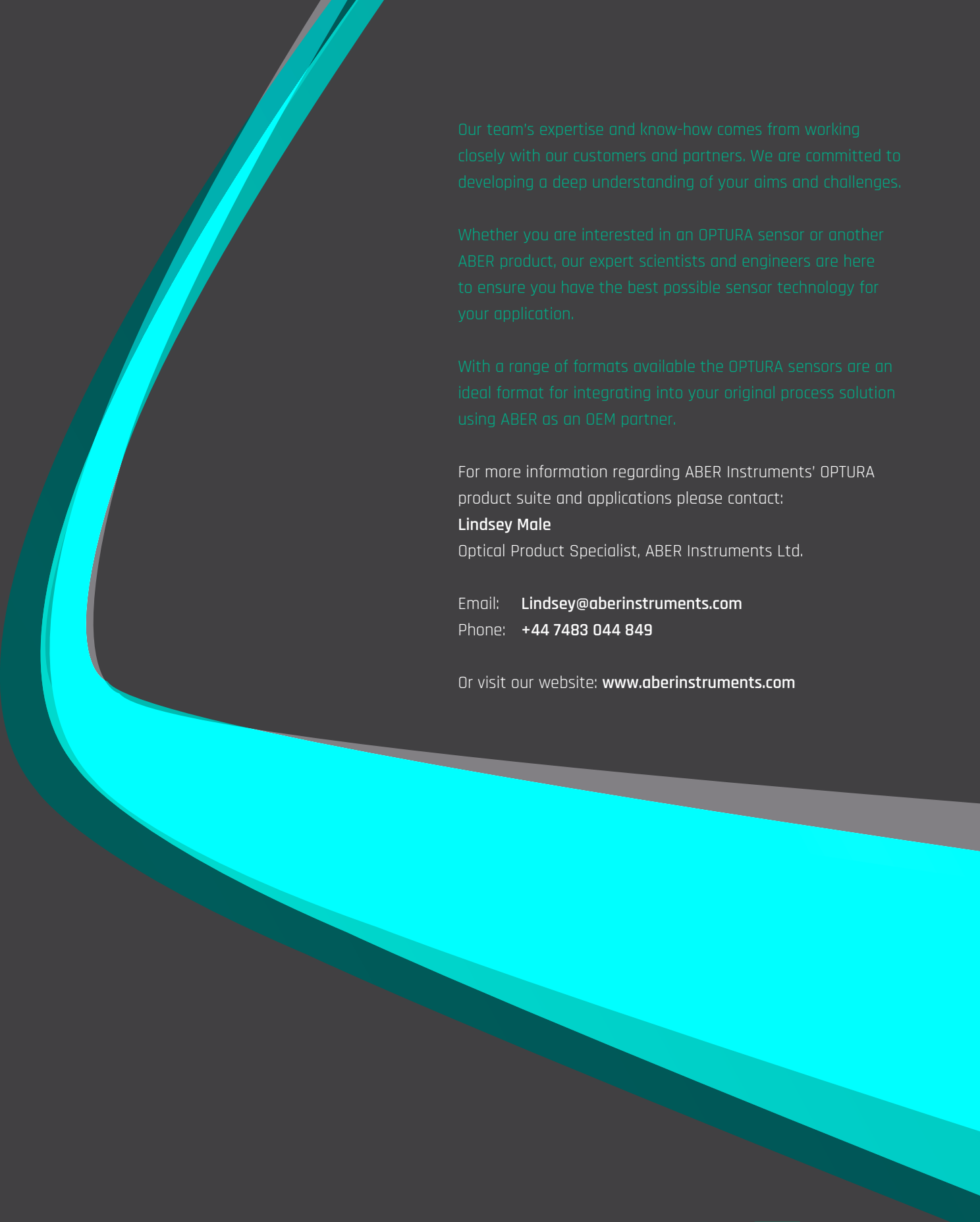
OPTURA HUB



Part Number	Description
8510-ST	OPTURA SPY standard vessel adaptor
8500-FL	OPTURA SPY flush vessel adaptor
8500-10	OPTURA SPY verification standard
8500-00	OPTURA SPY HUB



Parameter	Result
Wavelength	1330 nm
Cell concentration range	Minimum cell concentration - >0.01 g/l DCW <i>S. cerevisiae</i> (Type A & B) ~0.03 Abs OD600 >0.05 g/l DCW <i>S. cerevisiae</i> (Type C & D) ~0.127 Abs OD600 Maximum cell concentration- >175 g/l DCW <i>S. cerevisiae</i> (all sensors)
Resolution best case	8.45Exp-10 % reflectivity
Stability	0.24% @ 100 g/l yeast solution over a 35 minute period. Typical performance of 6 base units
Power supply	Desktop Mains PSU supplied by ABER (Part number: 2885-35, AC Input 110 to 240 volts AC 50/60 Hz). Installation Category II. Output - 24 V DC is typically supplied to the hub
SPY sensor cable length	2m
Operating temperature	Sensor - 5 to 70 °C (40 to 160 °F) OPTURA HUB - 15 to 40 °C (59 to 104 °F)
Humidity	35-65 %
Performance verification	Reflectance standard (Low and high)
Laser product classification	Class 1M
Communications	2 x 4-20mA (Reflectance and Growth Rate) USB B MODBUS



Our team's expertise and know-how comes from working closely with our customers and partners. We are committed to developing a deep understanding of your aims and challenges.

Whether you are interested in an OPTURA sensor or another ABER product, our expert scientists and engineers are here to ensure you have the best possible sensor technology for your application.

With a range of formats available the OPTURA sensors are an ideal format for integrating into your original process solution using ABER as an OEM partner.

For more information regarding ABER Instruments' OPTURA product suite and applications please contact:

Lindsey Male

Optical Product Specialist, ABER Instruments Ltd.

Email: Lindsey@aberinstruments.com

Phone: **+44 7483 044 849**

Or visit our website: www.aberinstruments.com

ABER