

Aber Instruments

Company Profile

Founded in 1988, Aber Instruments (AI) was developed around the research activities of Aberystwyth University and the Centre for Alternative Technology (CAT), based in Machynlleth. AI devised and patented a radio-frequency impedance method to assess live biomass in fermentations through the measurement of the inherent capacitance of living cells (dielectric spectroscopy). In a matter of only three years, systems were sold to major biopharma and brewing companies. AI are currently the global leader in online biomass measurement.



Collaborating with BEACON

AI, having previously collaborated with IBERS through the Grassohol project in 2009, was keen to be involved once more with the IBERS department.

BEACON had been investigating dielectric spectroscopy (DS) applied to Distillers Dried Grains with Solubles (DDGS) and was interested in establishing the change, if any, in DS following pre-treatment from the pilot-scale steam explosion equipment. BEACON had identified AI as having the best biomass probes for this work, and a collaboration began. The company provided BEACON scientists access to their biomass probes and continued the collaboration with particular focus on the development of appropriate algorithms for data interpretation.

The biomass probes and software used allowed the enzymatic degradation of the plant cell material to be followed in real time - with the critical end point to be determined for the addition of yeast and the start of the fermentation process and production of bioethanol.

The results of the collaboration demonstrated that DDGS had a significant and measurable inherent capacitance and that the subsequent decay of this capacitance following the addition of specific enzymes for breaking the cellular structure could be followed in real time and modelled accurately. The results of the collaboration were subsequently published in the *Bioresource Technology Journal* (Bryant *et al.*, 2012).

“The effective collaboration has enabled Aber Instruments to explore new market potential and gain an early foothold in the new and growing worldwide production of biofuels and bioproducts.”

Dr John Carvell, Sales and Marketing Director

AI have benefited from the opportunity of testing their technology in the field providing invaluable results for their research work and attracting high calibre research scientists and fermentation experts. Working with the BEACON team has further enhanced the company's reputation as the leader in online biomass measurement. AI have since been involved in a second collaboration with BEACON investigating the capabilities of their new mini probes compared to their conventional probes for the determination of yeast growth in cultures.



For more information: www.aber-instruments.co.uk/