Celignis Biomass Analysis Laboratory

Foundation
- 2014

Turnover
- -

Employees
- -

Branches
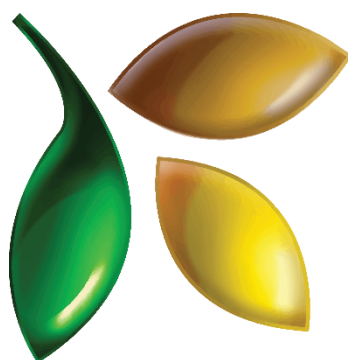- 1

Key materials
-

Key products
-

Celignis (www.celignis.com) provides services for the laboratory analysis of biomass and bioproducts. In particular, we focus on analysing samples for properties relevant to the production of biofuels and bioenergy. We are a spin-out from an FP7 project co-ordinated at the University of Limerick, based on IP developed by founder Dr Daniel Hayes for rapid analysis biomass. Currently we focus on five core analysis areas:

(1) **Lignocellulosic feedstocks destined for use in hydrolysis technologies** – We also analyse pre-treated biomass and the residues of conversion. We use standard chemical methods as well as using our own proprietary **rapid, accurate, and low-cost** infrared method (described below). More detail at: www.celignis.com/cellulosic.

(2) **Liquid Outputs of Bio-Conversion Processes** - For carbohydrates and organic acids/furans. We can determine the oligomeric constituents in liquid streams. More detail is provided at: www.celignis.com/analysis-of-pretreatment-liquids.

(3) **Feedstocks for combustion or use in other thermal processes** – Important parameters include: elemental composition (e.g. carbon, hydrogen, nitrogen, sulphur), heating value, volatile matter, moisture, and ash content/composition. We follow internationally approved (e.g. EN/ISO/ASTM) analysis methods. More detail at: www.celignis.com/combustible.

(4) **Physical Properties of Biomass** – e.g. particle size, bulk density, basic density, pellet properties.

(5) **Aquatic Biomass** – We are working on developing rapid analysis models for seaweed.
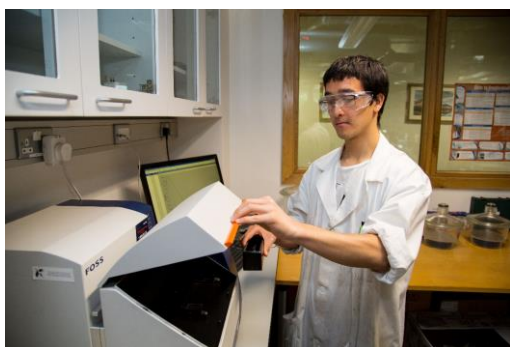
Celignis Biomass Analysis Laboratory

Contact

Celignis
Unit 4 Mill Court, Upper William Street, Limerick
Ireland
www.celignis.com

Contact person

Daniel Hayes
CEO
(+353) 61 518 440
dan@celignis.com
@celignis

We pride ourselves on the quality of our analytical methods and the accuracy and precision of our data. These methods have been in development for over 10 years and are now highly refined. We have also developed (over ~35 person years of work) a series of models that predict 13 lignocellulosic parameters from the near infrared (NIR) spectra of biomass. While it takes ~2 weeks to determine these via standard (chemical) methods, it takes only 2 minutes using our NIR models. The cost is also significantly reduced (from €60 per sample). No other company provides such a rapid or low-cost service. Our method allows clients to analyse many more samples than would otherwise be possible.

We are also actively involved in **research**. In September 2016 we started working on BIOrescue, a research project funded by the **Horizon 2020** Biomass Based Industries scheme, and we are looking to participate in future H2020 projects. We have several ideas on how to further advance the art in biomass analysis and feedstock evaluation. Our ultimate target is to deploy our NIR models online within biomass power stations and biorefineries to allow for real-time (e.g. conveyor-belt) analysis of biomass and process outputs. This concept has been positively evaluated in Evaluation Summary Reports from proposals to Horizon 2020.

We also recognise that feedstock composition is an aspect that has been, to date, under-represented in projects related to modelling and developing biorefinery systems. Often times inappropriate literature data have been used where direct analysis would have given a much more accurate picture. We can help in that regard or offer the necessary insight to carefully evaluate literature data for non-research projects. Daniel Hayes has experience in writing and co-ordinating an EU project (www.dibanet.org) and can also help in the proposal preparation process.