



**SCION**   
forests • products • innovation

## ADVANCED CHEMICAL CHARACTERISATION

Scion offers niche capability in the chemical analysis of plant- and bio-based substances. Our suite of analytical equipment combined with our specialised skills enables us to offer a comprehensive service in one location.

### NUCLEAR MAGNETIC RESONANCE

Scion has a range of Nuclear Magnetic Resonance (NMR) instruments to analyse natural products and materials made from plants. We offer the specialised capability needed to derive meaningful results for clients.

Scion offers two types of NMR spectroscopy on site, solid-state and solution-state. Our instruments are:

- Multinuclear Avance III 200 MHz solid-state NMR.
- Multinuclear Avance III 400 MHz solution-state NMR.

These instruments are used to analyse the molecular composition of material samples including, for example:

- chemical composition and structure of plant materials
- wood genetic modification
- soil organic chemistry
- extractives.

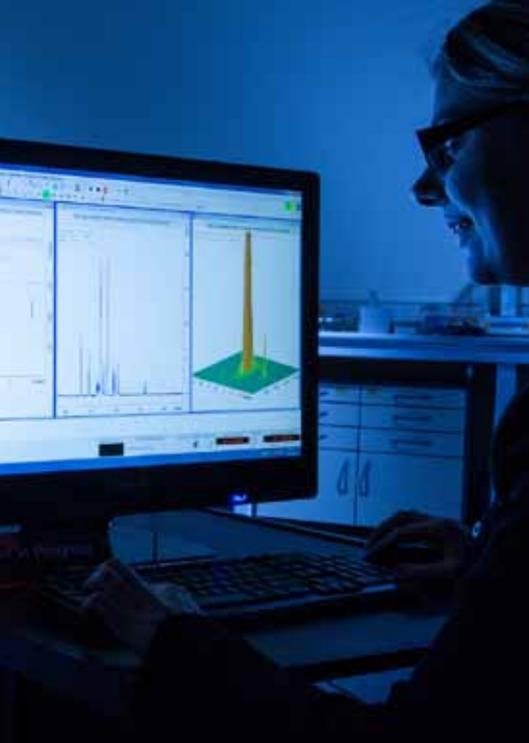
### Solid-state NMR

Solid-state NMR spectroscopy is a powerful method for characterising solid materials. The solid-state instrument is used for materials that cannot be dissolved, such as wood and biopolymers.

Scion's specialises in solid-state NMR techniques for the analysis of lignocellulosics and other bio-derived materials.

This capability can be used for a range of functions including:

- checking the presence and functionality of additives.
- analysing environmental samples
- analysing feedstocks for manufacturing
- identification of compounds resulting from biodegradation.



### Solution-state NMR

Solution-state NMR spectroscopy is a method for characterising the molecules within a liquid. This instrument is used for analysing chemicals in a dissolved state.

Scion uses this capability to develop bio-based adhesives and plastics, and to screen for chemical composition (metabolomics).

#### Additional services:

##### Micro-imaging

Scion offers Magnetic Resonance Imaging (MRI) capability for samples, up to 80mm in width. This instrument is primarily used to analyse moisture movement inside materials such as wood or plastics.

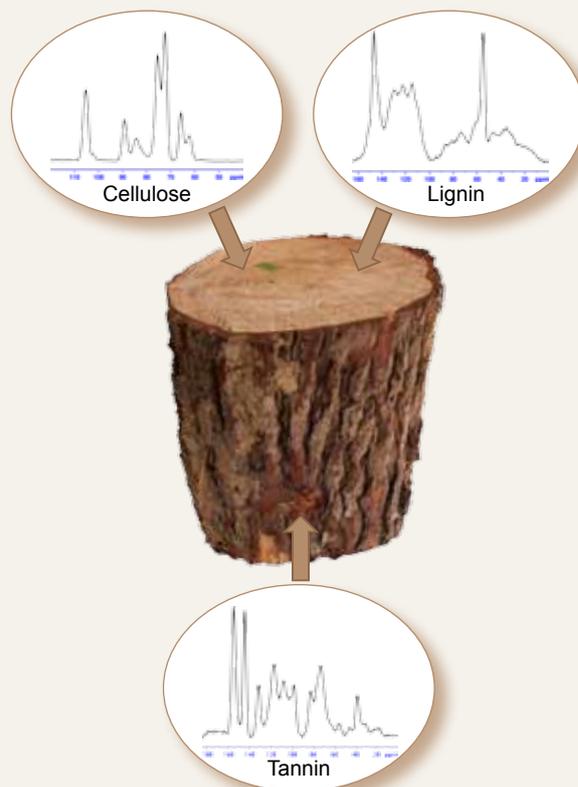
##### Synchrotron

Scion has a working relationship with the Australian Synchrotron facility located in Melbourne. Scion staff have capabilities in x-ray diffraction analysis of lignocellulosics, natural fibres and other biopolymers, such as PLA. This capability can be used to complement Scion's NMR suite.

**When used in combination, all of this technology can create the fullest possible understanding of the molecular structure within a substance.**

#### CONTACT

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**Scion's NMR instruments and NMR spectroscopists fill a unique niche in New Zealand's science capability specialising in natural and manufactured biopolymers.**

**We are among a small number of laboratories globally that specialises in forests, wood and wood fibre.**