

Carbotrace

General Information

Carbotrace are optotracer molecules providing means for anatomical mapping of carbohydrate structures in plants and for non-destructive composition analysis of polysaccharides in bio-based materials and biofuels.

The optotracing technology has been developed by a team of researchers at Karolinska Institutet (KI), Royal Institute of Technology (KTH) and Linköping University in Sweden and is a result of many years of cutting-edge nanoscience and organic chemistry research. Optotracing has been defined by the researchers as the use of structure-responsive fluorescent molecules which become highly fluorescent when binding and exhibit unique spectral signatures dependent on the structure of their binding partner. The unique combination of fluorescence and the target-specific signal can be used to clearly identify biomolecules in various types of materials.

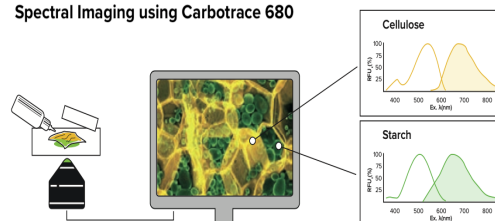
Carbotrace optotracers are designed for anatomical mapping of carbohydrate structures in plants and for non-destructive composition analysis of polysaccharides in bio-based materials and biofuels. The structure-responsive optotracer **Carbotrace** differentiates between different types of glycosidic linkages in carbohydrates. The products are available in aliquots of 50 μl , 100 μl , 150 μl or 200 μl (all delivered in 50 μl vials).

Spectral Imaging using Carbotrace

Identification of Cellulose and Starch Structures in Potato

- prepare freshly sliced potato (1 mm)
- dilute **Carbotrace 680** 1:1000 in PBS (pH 7.4)
- immerse potatoes in diluted **Carbotrace 680** for ca. 30 min
- wash with PBS
- mount on microscope slide
- image with the following excitation/emission settings: Ex: 405 nm Em: 430–450 nm, Ex: 473 nm Em: 490–540 nm, Ex: 535 nm Em: 575–620 nm and Ex: 635 nm Em: 655–755 nm or acquire spectra with a plate reader or spectral microscope.

Spectral Imaging using Carbotrace 680



Carbotrace 680 is a structure-responsive optotracer. That means, applied in a potato sample, it shows a unique spectral signature when binding to cellulose or starch. In cellulose, glucose units are joined by β -1,4-glycosidic bonds and in starch, which consists of amylose & amylopectin, glucose units are joined by α -1,4- and α -1,6-glycosidic bonds. **Carbotrace 680** can distinguish between the different glycosidic linkages in these structures.

Quick Facts

Carbotrace optotracers are:

- Provided as 1 mg/ml solution in volumes of 50 μl , 100 μl , 150 μl and 200 μl
- Fast
- Simple and easy to handle
- Photo- and thermostable
- Non-toxic
- Accurate

Storage

- Store **Carbotrace** at 4°C.
- Use the opened vial within 12 month.

Note

- **Carbotrace** is for research use only.
- **Carbotrace** is not for diagnostic use or use in humans.
- **Carbotrace** is not for resale.

Head Office

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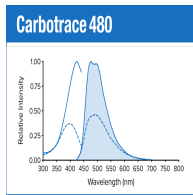
Company Information

Org-nr: 559016-7093
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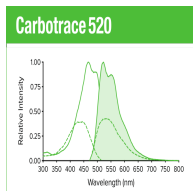
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Carbotrace Product Series



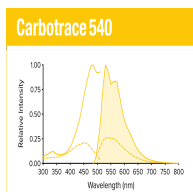
Carbotrace 480 – blue optotracer molecule for spectral imaging of carbohydrates

To excite the fluorescence of **Carbotrace 480**, and thereby identify structures in sample, use any type of fluorescence microscopy equipment (confocal or epifluorescence) or a spectrophotometer with fluorescence detection capability. Emission for **Carbotrace 480** can be detected at 480 nm using the standard DAPI filter set and excited using the 405 nm laser line. The optical spectrum also allows custom settings within the detection range of 470-550 nm and excitation range of 405-458 nm.



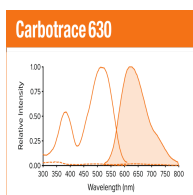
Carbotrace 520 – green optotracer molecule for spectral imaging of carbohydrates

To excite the fluorescence of **Carbotrace 520**, and thereby identify structures in sample, use any type of fluorescence microscopy equipment (confocal or epifluorescence) or a spectrophotometer with fluorescence detection capability. Emission for **Carbotrace 520** can be detected at 520 nm using the standard FITC or GFP filter set and excited using the 458 or 488 nm laser line. The optical spectrum also allows custom settings within the emission detection range of 500-600 nm and excitation range of 405-488 nm.



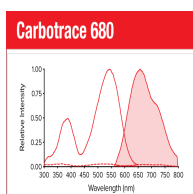
Carbotrace 540 – yellow optotracer molecule for spectral imaging of carbohydrates

To excite the fluorescence of **Carbotrace 540**, and thereby identify structures in sample, use any type of fluorescence microscopy equipment (confocal or epifluorescence) or a spectrophotometer with fluorescence detection capability. Emission for **Carbotrace 540** can be detected at 540 nm using the standard FITC, GFP or YFP filter set and excited using the 440 nm laser line. The optical spectrum allows custom settings within the detection range of 530-600 nm and excitation range of 430-500 nm.



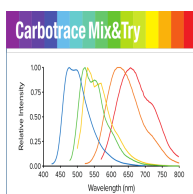
Carbotrace 630 – orange optotracer molecule for spectral imaging of carbohydrates

To excite the fluorescence of **Carbotrace 630**, and thereby identify structures in sample, use any type of fluorescence microscopy equipment (confocal or epifluorescence) or a spectrophotometer with fluorescence detection capability. Emission for **Carbotrace 630** can be detected at 630 nm using the standard PI (Propidium Iodide), Cy3, TxRed, mCherry or Cy3.5 filter set and excitation is achieved using the 488 or 514 nm laser line. The optical spectrum allows custom settings within the detection range of 600-650 nm and an excitation range of 458-514 nm.



Carbotrace 680 – red optotracer molecule for spectral imaging of carbohydrates

To excite the fluorescence of **Carbotrace 680**, and thereby identify carbohydrate structures in a sample, use any type of fluorescence microscopy equipment (confocal or epifluorescence) or a spectrophotometer with fluorescence detection capability. **Carbotrace 680** has an optical spectrum that allows custom settings within the detection range of 600-800 nm and an excitation range of 530-565 nm. Emission can be detected at 680 nm using the standard PI (Propidium Iodide), mCherry or Cy3.5 filter set and excitation is achieved using the 561 nm laser line.



Carbotrace Mix&Try – Test Kit for Getting Started

Following optotracer molecules are included in the **Carbotrace Mix&Try** Kit:

- **Carbotrace 480** (blue) is excited between 405-458 nm and emission is detected between 470-550 nm.
- **Carbotrace 520** (green) is excited between 405-488 nm and emission is detected between 500-600 nm.
- **Carbotrace 540** (yellow) is excited between 430-500 nm and emission is detected between 530-600 nm.
- **Carbotrace 630** (orange) is excited between 458-514 nm and emission is detected between 600-650 nm.
- **Carbotrace 680** (red) is excited between 530-565 nm emission is detected between 600-800 nm.

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