

Synthra HCNplus (Catalog No. 012)

Synthra HCNplus is a flexible and completely automated synthesis system for routine production of $[^{11}\text{C}]\text{HCN}$ generated by gas-phase synthesis with additional labeling possibilities and radio-HPLC purification and SPE separation and formulation setup for the desired tracer production. With easy-to-use configuration software SynthraView, the Synthra HCNplus module offers both, fully automatic and manual modes of operation.

Gas Phase Capabilities

- ✓ High specific activities are achieved from in-target produced $[^{11}\text{C}]\text{CO}_2$ ranging from 5 Ci/ μmol to 30 Ci/ μmol .

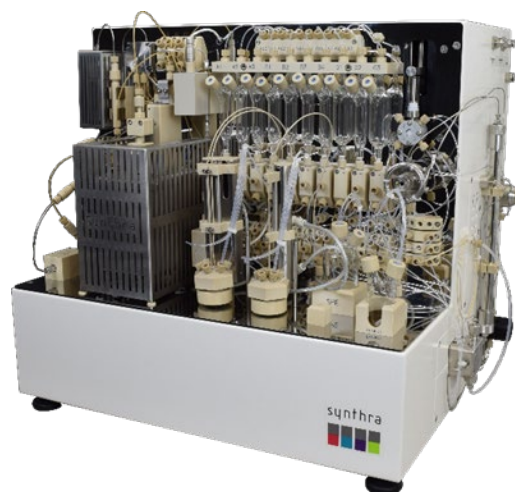
The $[^{11}\text{C}]\text{CO}_2$ produced in target is quantitatively trapped in the stainless steel capillary tubing at $-180\text{ }^\circ\text{C}$ and converted to $[^{11}\text{C}]\text{CH}_4$ by reduction on a Ni-catalyst. Subsequently, the $[^{11}\text{C}]\text{CH}_4$ is trapped in the CH_4 trap at $-120\text{ }^\circ\text{C}$ on Carboxen[®] and unreacted hydrogen is removed from the system. In a successive gas phase reaction, the $[^{11}\text{C}]\text{methane}$ is converted into $[^{11}\text{C}]\text{HCN}$ with anhydrous ammonia on a platinum catalyst at $950\text{ }^\circ\text{C}$ and can be used for further synthesis.

$[^{11}\text{C}]\text{Labeling Possibilities}$

- ✓ **$[^{11}\text{C}]\text{HCN}$ production:** $[^{11}\text{C}]\text{HCN}$ is ready for release after only 5 min starting from trapping the $[^{11}\text{C}]\text{CO}_2$. The yield is better than 70 %.
 - Up to 50 sequential HCN preparations are possible from a single box set-up.

General Features

- ✓ **Heating and cooling capabilities**
 - Six heating zones
 - Four with cooling capabilities
 - Temperature range: $-196\text{ }^\circ\text{C}$ – $950\text{ }^\circ\text{C}$
- ✓ **Detectors and controllers**
 - Six shielded radiation detectors
 - Four electronic flow controllers
 - Three pressure sensors
- ✓ **Self-cleaning system**
- ✓ **Dispensers and valves**
 - HR-dispenser (up to 50.000 steps, 2.5/5 mL)



- HPLC pneumatic injection valve (1.5 mL sample loop)
- Built-in preparative Radio/UV-HPLC system (0 – 40 mL/min) for product separation and fixed wavelength LED detector with 255 nm or 280 nm
- Five spare valves for customization
- Chemically inert valves with small dead volume $< 35\text{ }\mu\text{L}$, 5 bar rated

- ✓ **Dimensions** (w x d x h): 55 x 50 x 48 cm

- ✓ **Weight:** approx. 40 kg

Synthesis Features

- ✓ **Two closed 3 mL reaction vessels** with integrated cooling ($-196\text{ }^\circ\text{C}$ – $200\text{ }^\circ\text{C}$) to reduce synthesis time (min. volume: 50 μl)
- ✓ **Ten reagent vials**
 - Three small (1 – 3 mL) and seven large (10 – 15 mL) volume glass vials for reagents

Additional Synthesis Options

- ➔ **Methane option:** A reduced gas phase suitable for the use of CH_4 target.

Synthra C-11 Family

Product Description and Technical Specifications

synthra



→ **[¹¹C]CO** (Catalog No. 003co): After purification, the [¹¹C]CO₂ is released into the column oven for Zn- or Mo-catalyzed reduction to [¹¹C]CO.

→ **Product solvent evaporator** (Catalog No. 000pse)

→ **Variable wavelength UV/VIS detector** (Catalog No. 000vuv)

✓ **GMP/GLP compliant.** Electronic control and data collection (27/18 channels)

✓ **21CFRpart11 & LIMS** compatible

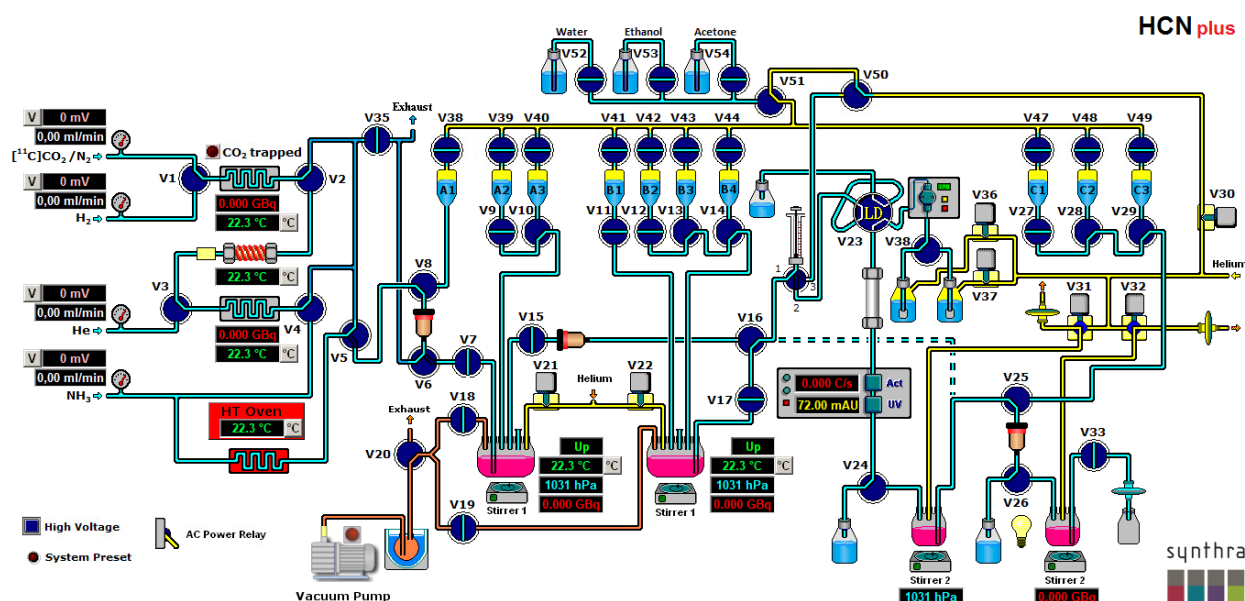
Terminal Control

✓ A laptop (Win 10 Pro) with preinstalled controlling software SynthraView is included

✓ Four digital inputs for communication with external devices upon request

GMP Features

✓ Synthesis files for [¹¹C]HCN and several [¹¹C]radiotracers available



The Graphical User Interface (GUI) of the SynthraView software.