Synthra C-11 Family

Product Description and Technical Specifications

Synthra HCNplus (Catalog No. 012tv)

Synthra HCNplus is a flexible and completely automated synthesis system for routine production of [^{11}C]HCN on the generation by gas-phase synthesis in combination with a setup for further reaction to the desired tracer product. 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}C]CO_2 ranging from 5 Ci/µmol to 30 Ci/µmol.

The target [^{11}C]CO_2 is trapped in the stainless steel capillary tubing at -180 °C and converted to [^{11}C]CH_4 by reduction on a Ni catalyst. Subsequently, the [^{11}C]methane is trapped at -120 °C on a Carboxen® CH_4 trap and unreacted hydrogen is removed from the system. In a successive gas phase reaction with anhydrous ammonia on a Platinum catalyst at 950 °C the [^{11}C]methane is then converted into [^{11}C]HCN and can be used for further synthesis.

[^{11}C]Labeling Possibilities

✓ **[^{11}C]HCN Production**: [^{11}C]HCN is ready for release after only 5 min starting from trapping the [^{11}C]CO_2. The yield is better than 70 %.

- Up to **50** sequential HCN preparations are possible from a single box set-up.

Additional Synthesis Options

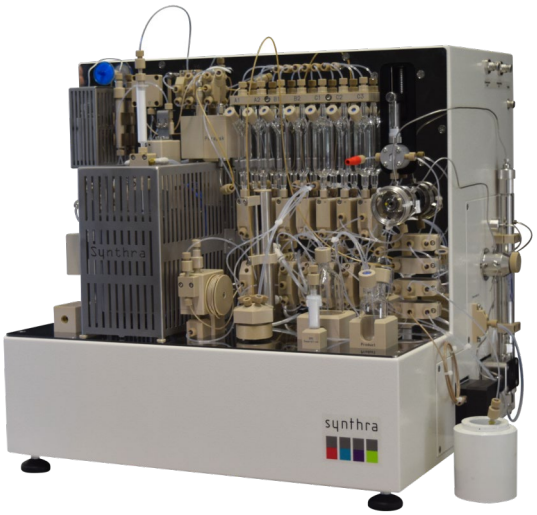
➔ **Methane Option:** A reduced gas phase suitable for the use of CH_4 Target.

➔ **[^{11}C]CO (Catalog No. 003CO):** After purification, the [^{11}C]CO_2 is released into the column oven for Mo-catalyzed reduction to [^{11}C]CO.

General Features

✓ **Heating and Cooling Capabilities**

- 6 heating zones
- 4 with cooling capabilities
- Temperature range: -196 °C – 1000 °C



✓ **Detectors and Controllers**

- 6 shielded radiation detectors
- 4 electronic flow controllers
- 3 Pressure sensors + 1 filter test unit

✓ **Self-Cleaning System**

✓ **Dispensers and Valves**

- HR-dispenser (up to 50.000 steps, 2.5/5 mL)
- Built-in preparative Radio/UV-HPLC system (0 – 40 mL/min) for product separation and fixed wavelength LED detector with 254 nm or 280 nm
- 5 spare valves for customization
- Chemically inert valves with small dead volume < 35 µL, 5 bar rated

Synthesis Features

✓ **2 closed 3 mL reaction vessel** (-196 °C – 250 °C) with integrated cooling to reduce synthesis time (min. volume: 50 µl)

✓ **10 reagent vials**

- Three small (1 – 3 mL) and seven large (10 – 15 mL) volume glass vials for reagents

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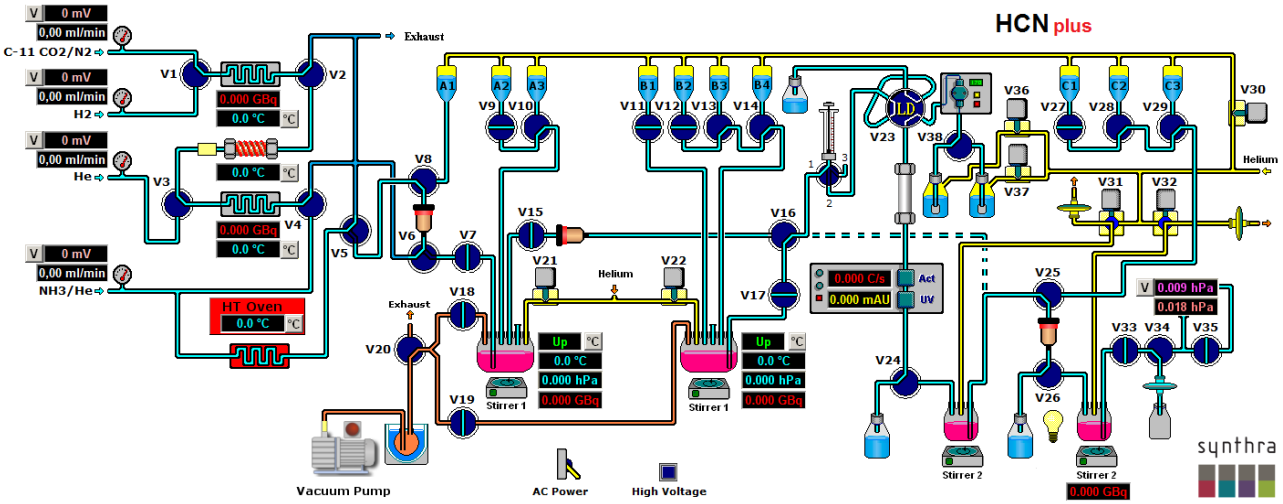
- ✓ **Further Options:**
  - ➔ Product vial heater option (Catalog No. 000ph)
  - ➔ Variable wavelength UV Detector option (Catalog No. 000vuv)

GMP Features

- ✓ **GMP/GLP compliant.** Electronic control and data collection (27/18 channels)
- ✓ **21CFRpart11** & **LIMS** compatible

Terminal Control

- ✓ **A Laptop (Win 10 Pro) and SynthraView are included**



The Graphical User Interface (GUI) of the SynthraView software

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