

## Radiochemistry boxes

**Category:**

**B. Particle Synthesis**

**Institute:** CIC biomaGUNE

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**Short technology description/Overview:**

Radiochemistry boxes are fully automated synthesis modules specially designed for the preparation (including synthesis, purification and formulation) of radiotracers labelled with either positron emitters or gamma emitters. The systems can be controlled from remote PCs and are installed into specially designed hot cells (shielded with lead) to guarantee the radioprotection of the operator. The modules are directly connected to the cyclotron targets to allow direct transfer (and use) of the radioactive atoms.

**Main Features (Equipment Capabilities):**

Five synthesis boxes are installed at CIC biomaGUNE (each of them installed into an individually isolated Hot Cell).

- Tracerlab FX<sub>C</sub> Pro system, for the synthesis of <sup>11</sup>C-labelled compounds starting from [<sup>11</sup>C]CO<sub>2</sub> or [<sup>11</sup>C]CH<sub>4</sub>.
- Tracerlab FX<sub>FN</sub>, for the synthesis of <sup>18</sup>F-labelled compounds starting from [<sup>18</sup>F]F<sup>-</sup>.
- Tracerlab FX<sub>FE</sub>, for the synthesis of <sup>18</sup>F-labelled compounds starting from [<sup>18</sup>F]F<sub>2</sub>.
- Bioscan Methyl Iodide synthesis box, for the synthesis of <sup>11</sup>C-labelled compounds starting from [<sup>11</sup>C]CO<sub>2</sub>.
- Microfluidics system for the production of <sup>18</sup>F-labelled compounds starting using microfluidics technology.
- Hot cells (Comecer) to house all chemistry boxes (7.5 cm of lead)

**Typical Samples & Images:**

*Any further Information:* The preparation of some commonly used radiotracers ([<sup>11</sup>C]Raclopride, [<sup>11</sup>C]PIB, [<sup>11</sup>C]Flumazenil, [<sup>18</sup>F]FDG, [<sup>18</sup>F]FDDNP, etc) can be routinely produced.