

OVEN (Heating Nanoparticles)

Objectives

The NPs are immersed into an IR-bath, so that they absorb the electromagnetic radiation during their transit, thereby increasing their temperature. The chemical composition and crystalline structure may change with temperature.

Environmental conditions

- The oven module comprises three infrared lamps that emit a quasi-black body spectrum with a maximum filament temperature of $\sim 1420\text{K}$ and around 2kW of heating power per lamp. The complete oven module is water cooled using a double wall construction.
- Due to the particular configuration of the module, and the large heat on the walls during operation, typical pressures in the Oven module cannot be measured. Diaphragms are installed both at the oven module entrance and exit, acting as IR mirrors and reducing the heat load in the neighboring modules. They consist in blank copper gaskets with an aperture in the center of 10mm and 12mm at the entrance and exit, respectively. Moreover, these diaphragms are an essential part of the differential pumping configuration in Stardust. When the MICS module is operating, they prevent the gases needed for NP formation to enter into the next modules.
- Turbo pump of 700 l/s .

