

MICS (Multiple Ion Cluster Source)

Objectives

Creating nanoparticles from a single or multiples cores from 1mbar in aggregation chamber.

Environmental conditions

- Three independents magnetrons. (2" diameter and 4mm of thickness).
- Gas aggregation Ar or He, with flux up to 150sccm ($2,5\text{mbar}\cdot\text{l}\cdot\text{s}^{-1}$).
- Nanoparticles size from 1 to 30nm.
- Base pressure after bake-out: $5\cdot 10^{-10}\text{mbar}$.
- MICS module has optimized pumping up to 10^{-2}mbar pressure of a $35\text{m}^3/\text{h}$ scroll dry primary pump. Attached to the MICS is a turbo molecular pump (TMP) of 1200 l/s. This combination of pumps together with a guillotine flow control valve is the necessary instrument to control the flow of particles at the exit of the MICS module.
- Full range gauge Pirani-Bayard-Alpert. Depending on the experiments performed, we have a capacitive gauge or Pirani-Penning full range connected to the lateral apertures in the aggregation zone, which gives us important information on the pressure in this part.

Technical parameters

- The **three magnetrons** are both direct current (DC) and radiofrequency (RF) compatible in such a way that combinations of conductive and isolating materials can be sputtered.
- MICS have the possibility to measure the pressure inside the aggregation chamber apart from the measure in the double wall region of the differential pumping.

