

Oxford ICP RIE

Responsible

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System Description

Our Oxford ICP RIE¹ is a Plasmalab System 100 Inductive Coupled Plasma Reactive Ion Etching (ICP RIE) etcher tool from Oxford. It is similar to the new [PlasmaPro 80 RIE ICP](#), but it has a Load-lock. The liquid nitrogen cooled cryo-stage allows for cryo-etching with smooth side walls and improved selectivity. The separate ICP plasma source allows to control independently the substrate bias, so it can etch with low damage and high rates due to the high ion density plasma. It is a fluorine-based etcher that is suitable for etching a large variety of materials: Si, Si₃N₄, SiO₂, metals (Nb, Ta, Ti, NbTiN, TiN), diamond. It allows a precise and low damage downstream descum ashing of photoresists and e-beam resists.

Sample size:

Up to 100mm wafers.

Materials restrictions:

Au free!

Please check the material compatibility with the LNQ staff every time you need to etch new materials not declared in your PICO project.

Gases available:

SF₆, CF₄, CHF₃, C₄F₈, He, O₂, N₂, Ar

Total gas flow: 10 – 100 sccm

Pressure: 10 – 100 mTorr

End point detection:

The etcher is equipped with a laser interferometer endpoint detector.

Substrate holder temperature:

Liquid nitrogen cooling for cryo etching.

Temperature: -100 °C to 200 °C

Helium backside cooling

Helium pressure: 0 – 10 Torr

Power supplies:

Table Power: 50 – 200 W 13.56 MHz RF generator

ICP power: 200 – 2500 W

¹ Previously known as “RIE100” in the old cleanroom in ODRA.

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Check the short manual and the [internal wiki page](#) for more details on RIE etching and processes available with this tool.