Worldwide Service and Support

Oxford Instruments is committed to supporting our customers' success. We recognise that this requires world class products complemented by world class support. Our global service force is backed by regional offices, offering rapid support wherever you are in the world.

We can provide:

- Tailored service agreements to meet your needs
- Comprehensive range of structured training courses
- Immediate access to genuine spare parts and accessories
- System upgrades and refurbishments

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- **Plasma Etch & Deposition**
- **Atomic Layer Deposition**
- **Ion Beam Etch & Deposition**
- **Nanoscale Growth System**
- **HVPE Tools & Substrates**

Oxford Instruments
Plasma Technology

plasma@oxinst.com

UK
North End, Yatton,
Bristol, BS49 4AP
Tel: +44 (0)1934 837000
Fax: +44 (0)1934 837001
Email: plasma@oxinst.com

Germany
Wiesbaden
Tel: +49 (0)6122 937 161
Fax: +49 (0)6122 937 175

Japan
Tokyo
Tel: +81 3 5245 3261
Fax: +81 3 5245 4466

PR China
Beijing
Tel: +86 10 6518 8160/1/2
Fax: +86 10 6518 8155

Shanghai
Tel: +86 21 6360 8530
Fax: +86 21 6360 8535

Singapore
Tel: +65 6337 6848
Fax: +65 6337 6286

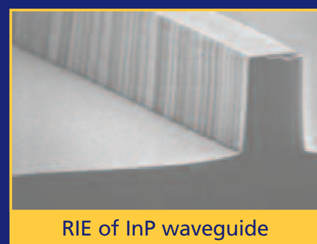
USA
Concord, MA
TOLLFREE +1 800 447 4717
Fax: +1 978 369 8287

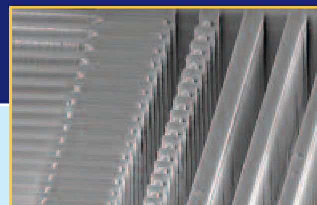
www.oxford-instruments.com

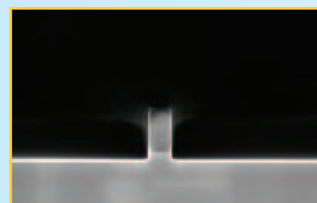
Plasmalab®80Plus
Plasmalab®800Plus

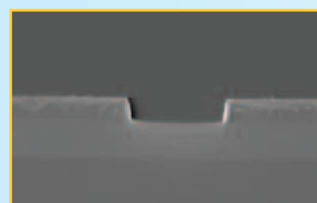
Compact open-loading process solutions for plasma etch and deposition

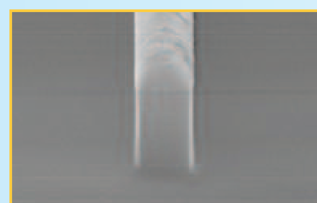
The Business of Science®

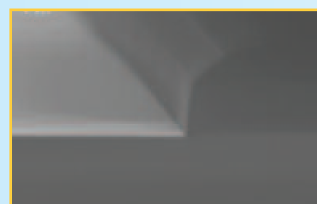

RIE of InP waveguide

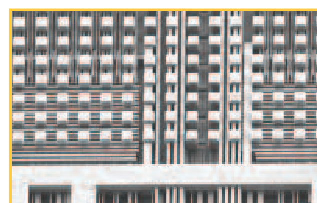

Deep Si feature etch by ICP-RIE cryo process


Sub µm Si mesa etch


Sub-µm Nb metal RIE (PR mask still in place)


7 µm polyimide feature RIE


RIE of In P with SiO_2 mask


Failure analysis - fast metal layer exposure in the **Plasmalab**µEtchICP

The **Plasmalab**80Plus and **Plasmalab**800Plus offer versatile plasma etch and deposition solutions with convenient open loading in a compact, small-footprint system, making them easy to site and easy to use, with no compromise on process quality.

Plasmalab80Plus

The **Plasmalab**80Plus is ideally suited to R&D or small-scale production, with 240 mm diameter table allowing 200 mm (8") wafer or 9 x 50 mm (2") batch capacity.

The open-load design allows fast wafer loading and unloading, ideal for research, prototyping and low-volume production.

Plasmalab800Plus

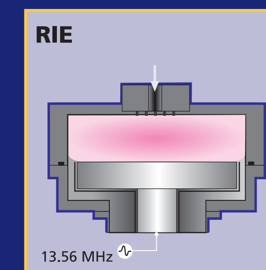
The **Plasmalab**800Plus with 380 mm or 460 mm diameter table offers full 300 mm (12") or large batch 48 x 50mm (2") capacity, enabling full production solutions in a small cleanroom footprint.

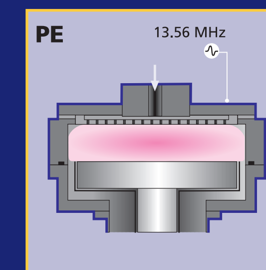
Wide range of applications

Applications include:

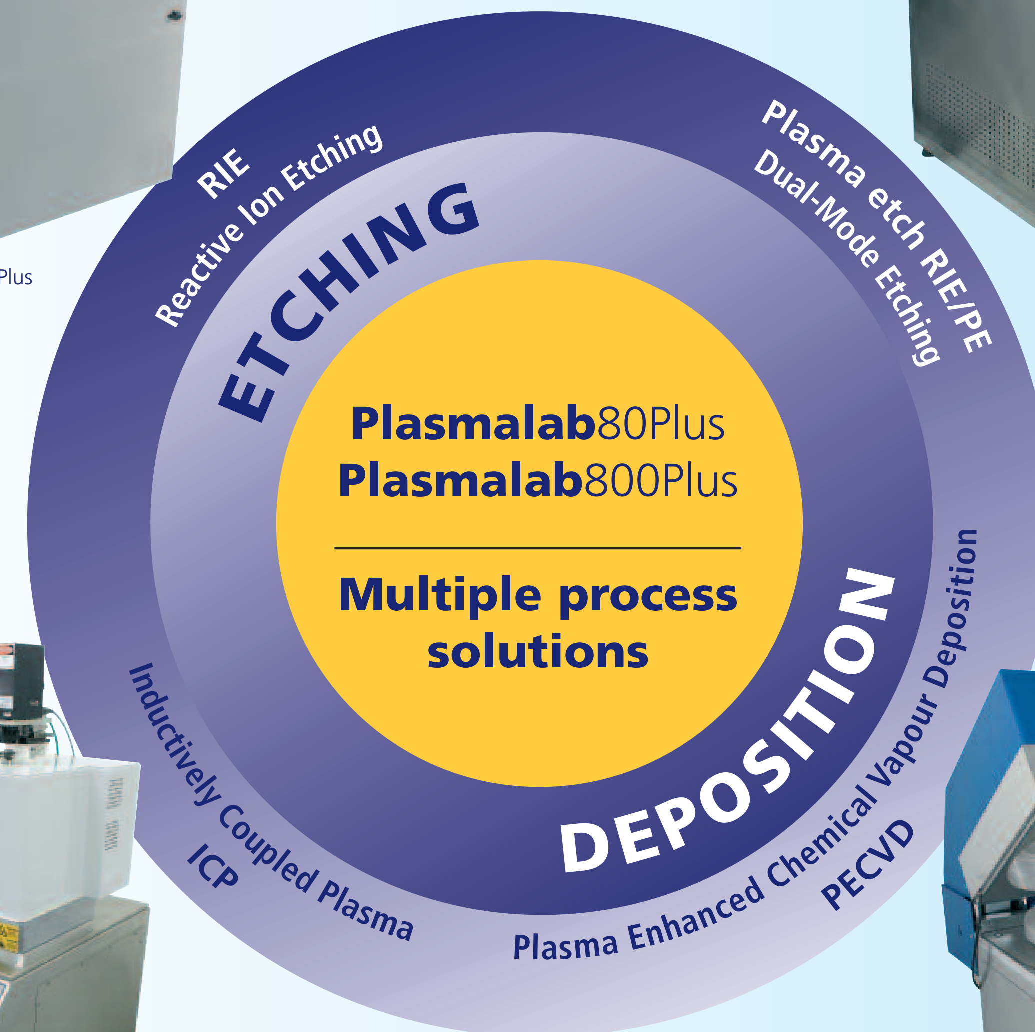
- SiO_2, SiN_x and quartz etch
- Metal etch
- Polyimide etch
- High quality PECVD of silicon nitride and silicon dioxide for photonics, dielectric layers, passivation and many other applications
- Hard mask deposition and etch for high brightness LED production
- Failure analysis dry etch de-processing using the specially-configured **Plasmalab**µEtch tools, with RIE, dual-mode RIE/PE and ICP processes ranging from packaged chip and die etch through to full 300 mm wafer etch
- III-V etch processes (with optional glovebox to enhance safety of toxic gas use)

Plasmalab80Plus
RIE Tool

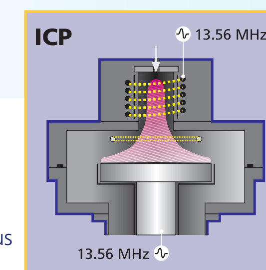


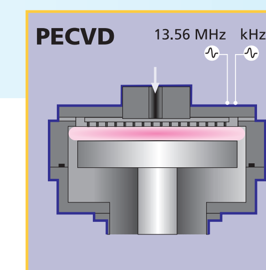


Plasmalab800Plus
Dual-Mode PE/RIE Tool



Plasmalab80Plus
ICP Etch Tool





Plasmalab800Plus
PECVD Tool

Plasma Etch & Deposition | Atomic Layer Deposition | Ion Beam Etch & Deposition | Nanoscale Growth Systems | HVPE

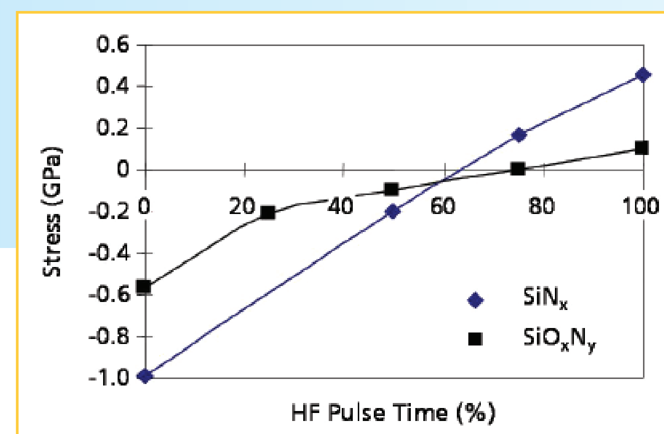
System benefits

Substrate temperature control

- Substrate temperature control is provided by a range of fluid-cooled and/or electrically-heated electrodes, with a temperature range up to 400 °C and excellent electrode temperature control and stability
- On the **Plasmalab**80Plus, options are available for helium-assisted substrate backside cooling, for optimum temperature control during processes
- Cooling on the **Plasmalab**80Plus can be further extended down to -150 °C with the cryogenic electrode option, enabling Si cryo-etch processes

PECVD stress control

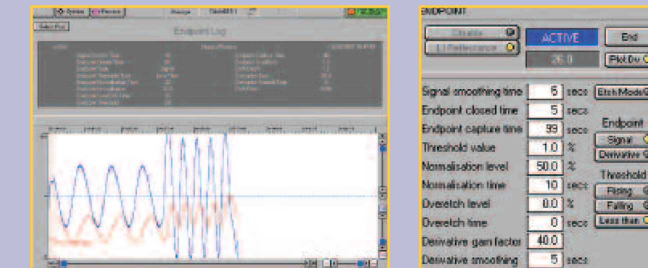
- Stress control in PECVD is provided by selectable or mixed high/low frequency plasma power, enabling deposited films to be tuned for tensile, compressive or low stress



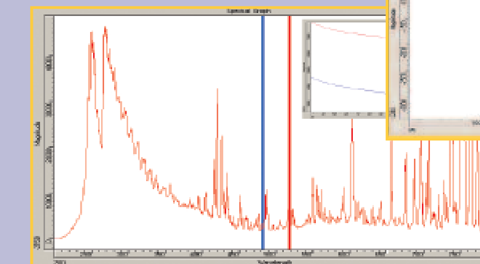
Etch end-point detection

Excellent etch control and rate determination can be provided by optional end-point detection, integrated with the **PC**2000™ process tool software.

- Laser end-point detection using interferometry to measure etch depth in transparent materials on reflective surfaces (for example, oxides on Si), or reflectometry for non-transparent materials (such as metals) to determine layer boundaries

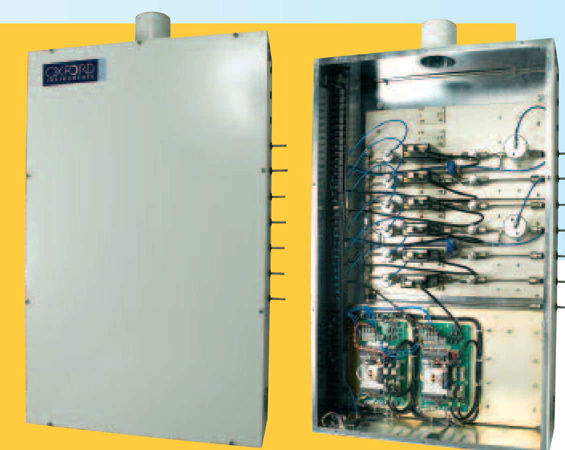


- Optical emission spectrometry (OES) for large sample or batch process end-pointing by detecting changes in etch by-products or depletion of reactive gas species, and for chamber clean end-pointing



Flexible gas line options

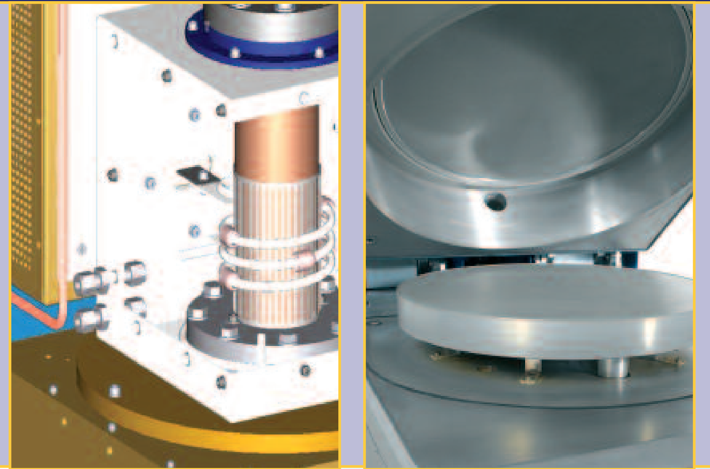
- 4-, 8- or 12-line gas pod options enable maximum process flexibility, with easy upgrade from 4 to 8 or 8 to 12 gas lines
- The gas pod may be sited remotely in a service area, and is vented and ready for ducting into an extraction system for full safety compliance



Optimised plasma sources

The electrostatic shield design in the **Plasmalab**80Plus ICP configuration avoids energetic ion bombardment and capacitive coupling, providing low substrate damage, with long life for the ICP tube and reduced maintenance.

Optimised showerhead design delivers high performance PECVD processes with excellent deposition uniformity.



Easy open access

- Clear access to the lower electrode and smooth, particle-free chamber opening operation is provided by the reliable pneumatic hoist mechanism

High performance processes

- Enhanced process uniformity and rates are guaranteed by using a high-conductance radial (axially symmetric) pumping configuration
- Optimised plasma conditions are enabled by three levels of control of matching capacitor values:
  - easy, automatic plasma generation using full automatic matching network
  - faster switch-over between widely differing processes using the range of preset capacitor values
  - process fine-tuning and diagnostics through the use of recipe-settable capacitor values in the **PC**2000™ software

  The addition of datalogging of the capacitor values offers traceability and history of chamber and process conditions.
- A close-coupled turbo pump provides high pumping speed and excellent base pressure

Easy maintenance

- Easy access to main components for maintenance through removable panels on each side

Range of electrode sizes and wafer capacity

	Plasmalab80Plus	**Plasmalab**800Plus	
Wafer stage (lower electrode) sizes	**240 mm**	**380 mm**	**460 mm**
Wafer loading capacity*			
50 mm/2″	9	30	> 40
75 mm/3″	4	13	21
100 mm/4″	2	8	12
150 mm/6″	1	3	5
200 mm/8″	1	1	2
300 mm/12″	-	1	1

* maximum, actual loading is process-dependent

Multiple process configurations

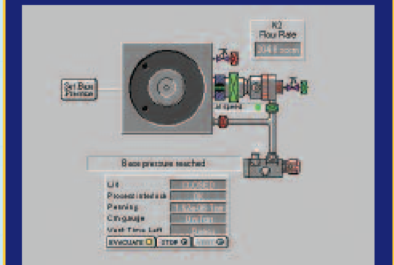
	Plasmalab80Plus	**Plasmalab**800Plus
PECVD	x	x
RIE	x	x
RIE/PE dual mode	x	x
ICP	x	

Cost of ownership

High performance and excellent uniformity processes mean increased productivity and tool utilisation. Together with excellent reliability, these create low cost of ownership for Oxford Instruments' process tools. Supported by Oxford Instruments' preventative maintenance and service contract packages, the ultimate in system uptime can be assured.

Process tool software

Oxford Instruments' **PC**2000™ software is clear, easy to use, quick to learn and configured exactly for the customer's system. Its visual interface controls and monitors the process tool, and offers the ability to control a tool cluster from a single interface and PC.



Process 'recipes' are written, stored and recalled through the same software, building into a process library. In cassette-to-cassette and cluster systems, the users can associate individual recipes with each wafer to be processed, and run a complete set of process steps, loops and repeats. Password-controlled user login allows different levels of user access and tasks, from 'one-button' run operation to full system functions. Continuous process data logging ensures traceability of each wafer and process GEM/SECS compatible.