

NNCI Plasma Etch Technologies

Silicon Deep Reactive Ion Etch (DRIE)			
<u>Plasmatherm Versaline</u>		<u>Wafer Size(max)</u>	<u>Comments</u>
Cornell		100mm	also Ge DRIE
Stanford		100mm	
Texas		100mm	
U. Chicago		200mm	
<u>Plasmatherm 770</u>		<u>Wafer Size(max)</u>	
Cornell		100mm	
<u>STS Rapier</u>		<u>Wafer Size(max)</u>	
U.Penn		100mm	
Harvard		150mm	
Washington		200mm	
Minnesota		100mm	
<u>STS ASE</u>		<u>Wafer Size(max)</u>	
Stanford		100mm	
Georgia Tech		100mm	
Arizona St.		100mm	
Louisville		100mm	
<u>Oxford 100</u>		<u>Wafer Size(max)</u>	
Georgia Tech	cryoetch	100mm	
Washington	cryoetch	100mm	
Montana St.	cryoetch	100mm	
UC San Diego		150mm	
<u>Alcatel</u>		<u>Wafer Size(max)</u>	
N.Carolina		150mm	
NCSU-NNF		150mm	
Virginia Tech		100mm	
<u>STS Pegasus</u>		<u>Wafer Size(max)</u>	
Georgia Tech		150mm	
Duke-SMIF		150mm	
Northwestern		100mm	
<u>Oxford Estrellas</u>		<u>Wafer Size(max)</u>	
Nebraska	cryo	100mm	

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III-V Etching

Plasmatherm 770

Cornell
Harvard
Georgia Tech
U. Chicago

Wafer size(max)

100mm
150mm
100mm
150mm

Comments

Oxford 100

Texas
Washington
NCSU-NNF
Minnesota
Montana St.

Wafer size(max)

100mm
100mm
150mm
150mm
100mm

Oxford Cobra

Stanford
U.Penn

Wafer size(max)

100mm
100mm

Plasmatherm APEX

Arizona St.

Wafer size(max)

100mm

STS

Arizona St.
Georgia Tech

Wafer size(max)

100mm
100mm

Trion

UC San Diego
Virginia Tech

Wafer size(max)

150mm
200mm

Si-based Dielectric Etching

Oxford 100

Cornell
Georgia Tech
Minnesota
Washington
UC San Diego

Wafer size(max)

100mm
100mm
150mm
100mm
150mm

Comments

Plasmatherm 770

Georgia Tech
U. Chicago
UC San Diego

Wafer size(max)

100mm
150mm
150mm

Si-based Dielectric Etching

<u>Plasmatherm Versaline</u>	<u>Wafer size(max)</u>	<u>Comments</u>
Stanford	100mm	
<u>Oxford Cobra</u>	<u>Wafer size(max)</u>	
U.Penn	100mm	
<u>STS-LPX</u>	<u>Wafer size(max)</u>	
Harvard	150mm	
<u>ULVAC 570-NLD</u>	<u>Wafer size(max)</u>	
Harvard	150mm	
<u>STS-ICP</u>	<u>Wafer size(max)</u>	
Arizona St.	100mm	
<u>AMAT P5000</u>	<u>Wafer size(max)</u>	
Stanford	100mm	
<u>Trion</u>	<u>Wafer size(max)</u>	
Duke-SMIF	200mm	
Louisville	200mm	
Virginia Tech	200mm	
<u>Alcatel AMS100</u>	<u>Wafer size(max)</u>	
N.Carolina	150mm	

Metal Etching-ICP based

<u>Plasmatherm 770</u>	<u>Wafer size(max)</u>	<u>Comments</u>
Cornell	100mm	
Georgia Tech	100mm	
U. Chicago	150mm	
<u>Oxford 100</u>	<u>Wafer size(max)</u>	
Georgia Tech	100mm	
Minnesota	150mm	
Montana St.	100mm	
Washington	100mm	
<u>Oxford Cobra</u>	<u>Wafer size(max)</u>	
Harvard	150mm	
U.Penn	100mm	

Metal Etching-ICP based

Plasmatherm Versaline

Stanford

Wafer size(max)

100mm

Comments

Trion

Louisville

UC San Diego

Virginia Tech

Nebraska

Cornell

Wafer size(max)

200mm

150mm

200mm

300mm

200mm

chrome

Alcatel AMS100

N.Carolina

Wafer size(max)

150mm

Diamond Etch-ICP

Oxford Cobra

Cornell

Wafer size(max)

100mm

Comments

Plasmatherm Versaline

Stanford

Harvard

Wafer size(max)

100mm

100mm

Unaxis 770

Harvard

Wafer size(max)

150mm

Intlvac IBE

Harvard

Wafer size(max)

150mm

XeF2 Release

Xactix X3

Cornell

Stanford

U.Penn

U. Chicago

Wafer size(max)

150mm

150mm

150mm

150mm

Comments

Xactix E2

Harvard

Louisville

Washington

Wafer size(max)

150mm

150mm

150mm

NNCI Plasma Etch Technologies

XeF2 Release

Xactix E1
Georgia Tech
Arizona St.
UC San Diego
Minnesota

Wafer size(max)

100mm
200mm
150mm
150mm

Comments

VHF Release

Primaxx SPTS
Cornell
Stanford
Washington
Louisville

Wafer size(max)

200mm
200mm
150mm
200mm

AMMT
Georgia Tech

Wafer size(max)

100mm

MEMSStar
U. Chicago

Wafer size(max)

200mm

Idonus
UC San Diego

Wafer size(max)

150mm

Ion Milling

AJA
Cornell
Texas

Wafer size(max)

150mm
100mm

Comments

Intlvac Nanoquest
Stanford
Harvard
Minnesota
Nebraska

Wafer size(max)

100mm
150mm
150mm
100mm

Deep Oxide Etching (pyrex, etc)

STS AOE ICP
Georgia Tech

Wafer size(max)

150mm

Comments

NNCI Plasma Etch Technologies

Si Photonics (smooth sidewall etch)

<u>LAM 9400</u>	<u>Wafer size(max)</u>	<u>Comments</u>
Stanford	100mm	
<u>Oxford Cobra</u>		
Cornell	100mm	HBr based
<u>STS-LPX</u>		
Harvard	150mm	
<u>Plasmatherm 770</u>	150mm	mixed etch
Cornell		

2D Materials (MoS₂, WSe₂, MoSe₂, BN, etc..)

<u>STS-LPX</u>	<u>Wafer size(max)</u>	<u>Comments</u>
Harvard	150mm	
<u>Plasmatherm 720/740</u>		
Cornell	200mm	RIE only

Other dielectrics (TiO₂, Ta₂O₅, Nb₂O₅,..)

<u>Oxford 100-ICP</u>	<u>Wafer size(max)</u>	<u>Comments</u>
Cornell	100mm	
<u>Oxford Cobra</u>		
Harvard	150mm	

Difficult materials (LiNbO₃, Zn-based materials)

<u>Ulvac 570 NLD</u>	<u>Wafer size(max)</u>	<u>Comments</u>
Harvard	150mm	
<u>AJA</u>		
Cornell	150mm	LiNbO ₃