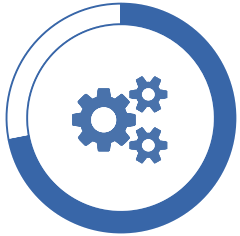
SiC processing

In Corial 200 series

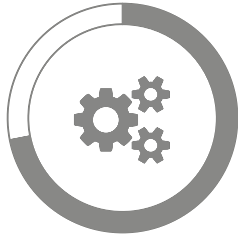
CORIAL SOLUTION FOR SIC PROCESSING

200 mm Platform

Single-wafer and batch-loading equipment



Best-in-class uniformity and process repeatability



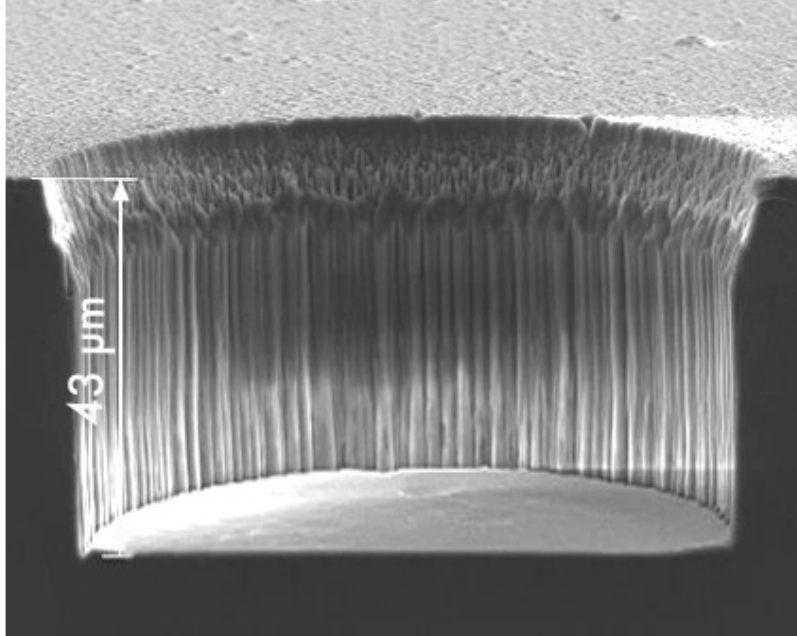
Flexibility and scalability of equipment

Dedicated processes for RF devices, MEMS, power devices…

PROCESS SOLUTION
SIC ETCH

SIC VIA ETCH PROCESS

With Ni Mask



> 1400 NM/MIN
ETCH RATE

> 20
SELECTIVITY TO Ni MASK

SMOOTH
SIDEWALLS

> 100
µm ETCH DEPTH

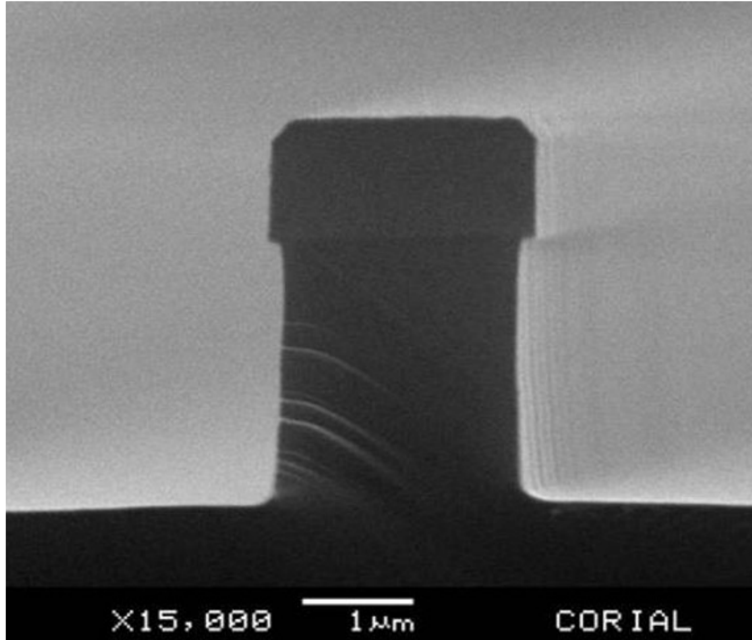
ANISOTROPIC ETCH PROFILE

± 3 %
UNIFORMITY

CORIAL
A Plasma-Therm Company

LOW DAMAGE SIC ETCH PROCESS

For Power Electronics



700 NM/MIN ETCH RATE

87° PROFILE ANGLE

SLIGHTLY ISOTROPE ETCH PROFILE WITHOUT CLAMPING

NO TRENCHING

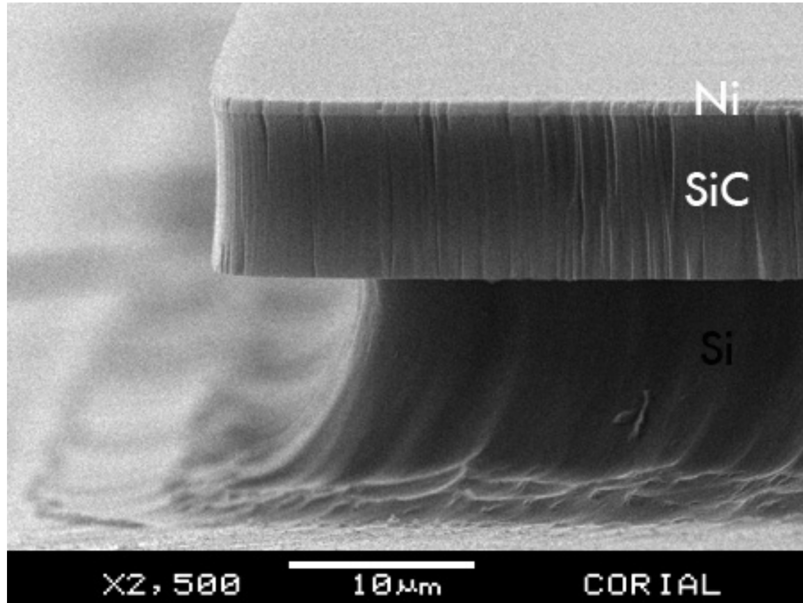
2.5 SELECTIVITY TO SiO2 MASK

2.5 µm ETCH DEPTH

1:1 ASPECT RATIO

SIC ETCH PROCESS WITH NI MASK

For MEMS



800 NM/MIN
ETCH RATE

85° PROFILE ANGLE

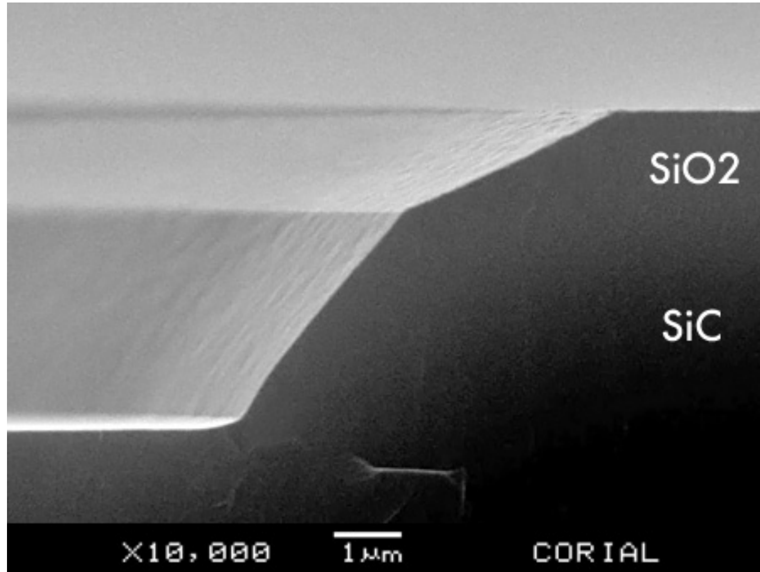
SMOOTH SURFACE

2 µm
ETCH DEPTH

> 25
SELECTIVITY TO Ni MASK

TAPERED SIC ETCH PROCESS

For Power Electronics



250 NM/MIN ETCH RATE

2 SELECTIVITY TO SiO2 MASK

50° PROFILE ANGLE

2.5 µm ETCH DEPTH

TAPERED ETCH PROFILES

LOW ROUGHNESS

CORIAL A Plasma-Therm Company

SYSTEM DESCRIPTION
CORIAL 210IL

CORIAL EQUIPMENT

Corial 210IL

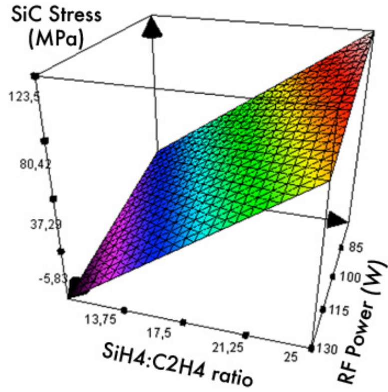
This machine can be operated in both RIE and ICP-RIE modes.

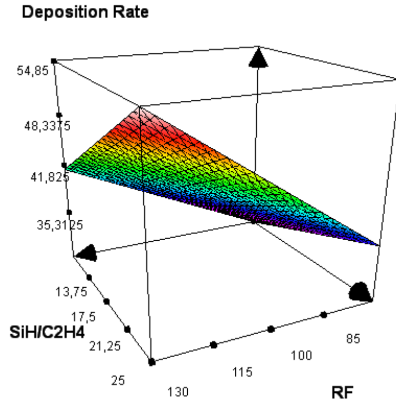
- For up to **200 mm substrates,**
- Hot **quartz liners** for protection of ICP reactor walls from non-volatile contamination,
- **High power** (2 KW) **ICP** source producing uniform high density plasma,
- **High power** (1 KW) **RF** source to ensure high etch rates,
- Shuttles for **efficient adaptation** of the tool to different wafer sizes, and **soft wafer clamping** in ICP-RIE mode,
- Very **high conductance** pumping system Adixen ATH1600M,
- Helium pressure to ensure the thermal transfer between the cathode, the substrate holder and the substrates,
- **Laser end point detector** for measurement of the etching rate and determination of stop-etch point.

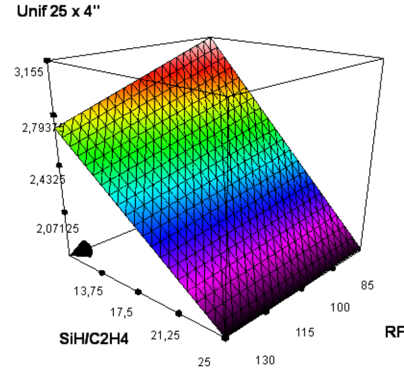
PROCESS SOLUTION
SIC DEPOSITION

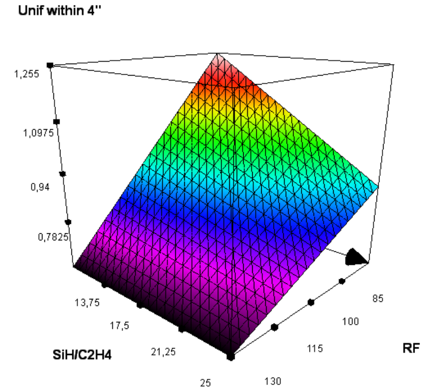
SIC DEPOSITION PROCESS

High Deposition Rates









Process	Deposition Rate (nm/min)	Refractive Index	Stress (MPa)	WIW Uniformity on 8” wafer (D250)	WIW Uniformity on 4” wafer (D500)	WTW Uniformity on 25 x 4” wafers (D500)
SiC PECVD deposition	20 to 150	2.6 to 3.0	-100 to +100	< ± 3%	< ± 1%	< ± 3%

CORIAL A Plasma-Therm Company

SYSTEM DESCRIPTION
CORIAL D250

CORIAL EQUIPMENT

Corial D250

This machine can be operated in PECVD mode.

- For up to **200 mm substrates,**
- **Compact** footprint,
- Uniformly heated pressurized rector design for **high uniformity of thickness and deposited film properties**,
- **Film stress control** with a single RF frequency,
- Efficient **plasma cleaning** allowing to eliminate manual cleaning,
- **Laser end point detector** for in-situ film thickness control.