

NEW ICP-RIE ETCHER **TE3100**



High Performance Dry Etcher : **TE 3100**

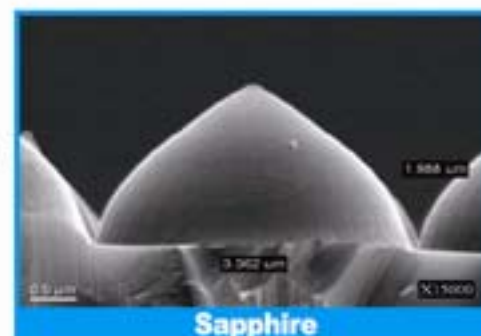
High Performance **Sapphire & GaN** Etch

- High Density Plasma Etching System
- Etching System for LED Mass production
- 12" Chucking Cathode
- PSS 4" X 5 Sheets Process at Sapphire wafer
- PSS 2" X 18 Sheets Process at Sapphire wafer

System Technology

RIE etching with Large area ICP Source Plasma excitation with dual 13.56MHz

- **ICP Source Power** : ~ 2KW at 13.56MHz
- **Bias Power** : ~ 1KW at 13.56MHz
- Efficient Power Coupling with Phase Shifter
- Bias Voltage Monitoring
- **Operation Pressure** : 1mTorr ~ 100mTorr
- **Etching Materials** : Patterned Sapphire Substrate Wafer, GaN
- **Process Vacuum Pump** : TMP (1600L/sec),
Booster & Dry Pump(580M3/H)



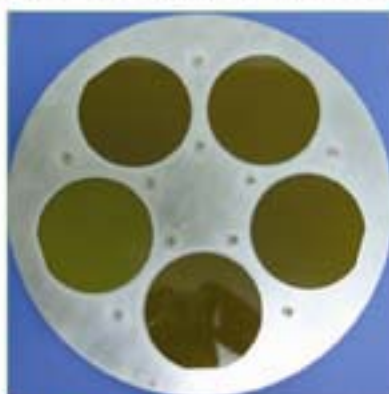
NEW ICP-RIE ETCHER TE3100

WAFER HOLDER for High Performance ETCHING

*** Available Etching Test for Customer Requested ***



(PSS 2" X 18 Sheets)

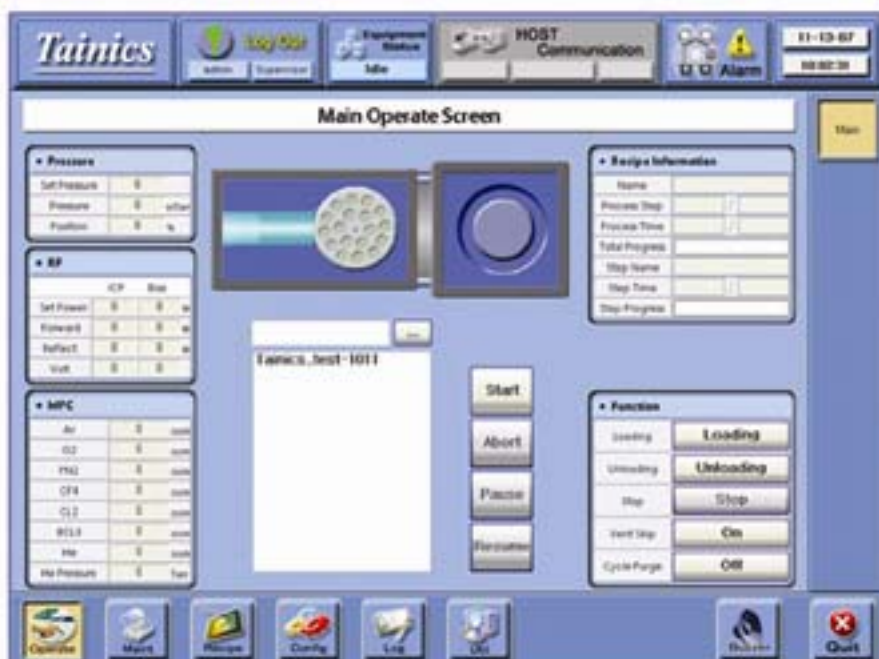


(PSS 4" X 5 Sheets)



(GaN 2" X 18 Sheets)

PROCESS SYSTEM CONTROL



**Auto Process Control by Software Program
LCD Touch Screen**

COMPANY HISTORY

- **Company** : Tainics Co., Ltd.
- **Establish** : 08 March, 2005
- **Capital** : KWN 564,000,000
- **President** : Jeong-Tae, KIM
- **Employee** : 12 Person
- **Main Product** : Dry Etcher, PECVD & Equipments for LED Fabrication
- **Location** : Suwon-City, Korea



※ Certificate of **INNOBIZ COMPANY** by Small and Medium Business Administration Republic of Korea

泰機械 : 泰 + 機械

Tainics : Tai (泰) + nics (機械 技術 : Mechatronics)

意味 : “世界 第一의 技術 企業으로 跳躍”

From Company foundation,

For LED Mass Production only,

We have develop impressive System for Sapphire-Substrate Embossing-Etching.

We have success Embossing-etching process with the Eighteen wafers per ONE Process RUN.

This is the first result in the worldwide at Sapphire-Substrate Embossing-Etching.

This Equipment is so-called "**Tainics Etcher**"

TECHNOLOGY PROGRESS

TARGET : Process Equipments for LED MASS-Fabrication

Equipment

~2005/6M ~2005/12M ~2006/6M ~2006/12M ~2007/6M ~2007/12M ~2008/6M

MICP Source

Cathode Module for Etch

TE 3100(PSS etching)

TE 3100(GaN etching)

PECVD (SiOx)

Mass Production
(18sheets /1 RUN~)

On-DEVELOP

~2005/6M ~2005/12M ~2006/6M ~2006/12M ~2007/6M ~2007/12M ~2008/6M

Evaporator Development

RF Filter Module

RF Phase Shift Module

ELC(Electrostatic Loader Cathode)

Wafer Holder Development for Batch Etching System

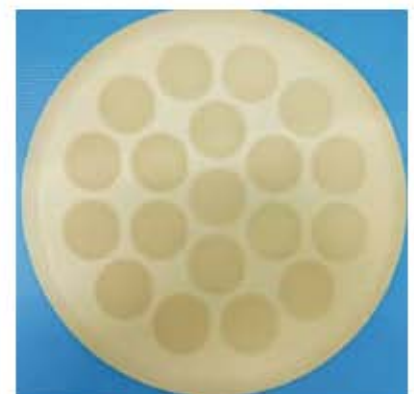
Wafer Holder



(PSS 2" X 16 Sheets)



(PSS 4" X 5 Sheets)



(GaN 2" X 16 Sheets)

NEW ICP-RIE ETCHER **TE3100**

4-Inch Wafer Etch Application



Basic Specification

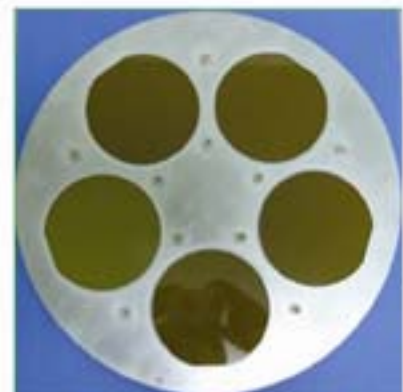
- RIE etching with ICP Source
- Plasma excitation with dual 13.56MHz
- Etching Rate $\geq 500 \text{ \AA} / \text{min}$
- Selectivity to PR mask : ≥ 0.6
- Nonuniformity (WIW, WTW) $\leq \pm 5\%$
- Loading Capacity on 1 Process RUN ;
Eighteen 2" Sapphire wafers
Five 4" Sapphire wafers

4-Inch Wafer Holder

Patent Pending [International]

Wafer Holder Advantage :

Wafer He backside Cooling type
Five 4" wafers, Eighteen 2" wafers
Higher Yield Margin on Edge Zone



MODEL : TWH-12MT-F

System Performance Inspection

[Etching Pattern Checking on the 4" Sapphire wafer]

Inspection : Take a SEM 100 Photo's, by each 1mm interval on 4" wafer

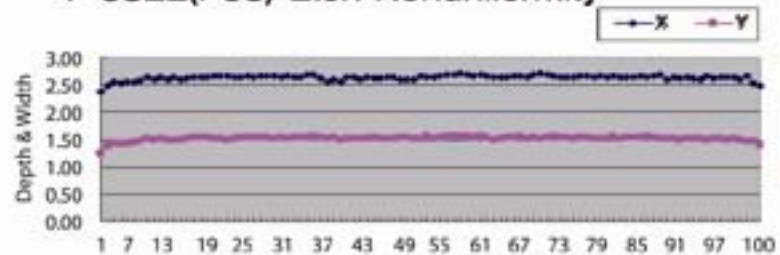
Result

Nonuniformity : X%NU : 3.2% Y%NU : 5.0%

Etch Rate : 755 Å/min

Selectivity : 0.8 (= 1.56/2.0 ; Etch Depth/PR height)

4" SSEE(PSS) Etch Nonuniformity



4" SSEE(PSS) Etch Nonuniformity

