

Business in MEMS CORE

MEMS CORE Co., Ltd.

Background of MEMS CORE



Founded by the collaboration of university and company

Esashi Laboratory, Tohoku University Prof. Masayoshi Esashi Abundant experiences in MEMS R&D: technologies accumulated over 35 years

Chemitronics Group

CEO: Koji Homma Abundant experiences in Semiconductor manufacture equipments : technologies accumulated over 25 years



Company profile



Founded: December 2001 Capital: 610 million yen President: Koji Homma (CEO) Employees: 30 Sites: Head office and Izumi Factory 3-11-1 Ake-dori, Izumi-ku, Sendai City, Miyagi Prefecture Tel: 022-777-8717, Fax: 022-777-8718







Business field





MEMS facility



As a group of hands-on makers creating new-generation MEMS, we turn dreams into reality by flexible development capabilities and creative strengths through keeping a very close relation with the users. We are at your services with various MEMS devices for prototype development.

Annealing and doping •Oxidation furnaces

Deposition

•Low-pressure plasma CVD •Low-pressure plasma CVD •Metal—organic CVD •EB deposition •Three-source sputtering •Sputtering

Dry etching

•RIE •Deep RIE •Equipment for dry-etching of sacrificial film •Ion-milling •Laser-processing machines •Plasma ashing •Glass RIE



Photolithography

•Two-plane mask aligner •Spin coaters •Pattern generators •CAD •Clean ovens •HMDS coating equipment

Inspection and measurement •FTIR •SEM •Measuring microscopes •Non-contact profilometers •Optical thickness meters •Optical thickness meters •Stylus-type profilometers •Metallurgical microscopes •Stereoscopic microscopes •Wafer probers •Stress meters •Sheet-resistance meters





Wet processes

•Ozone—water etching •Draft chambers for inorganic work •Draft chambers for organic work

Others

Equipment for room-temperature plasma processing of surfaces
UV-cleaning equipment
Anodic bonding equipment
Polishing machines
Dicers
Plating equipment
Thermo-compressive bonding equipment
Sand-blasters

Utilities

•Water purification equipment •Abatement equipment (scrubbers) •Water scrubber



Type of service



	Concept	Detailed design	Prototype	Evalua- tion	Produc- tion (small-lot)	
In-house develop- ment						
contract developmen	:			*	*	
Cooperative develop- ment	*	*		*	*	
Contract prototyping				*	*	
: Customer EXAMPLE : MEMS CORE ★ : Consultation ₆						

Development experience



Items	Technology	Application
Optical accelerometer	Laser interference	Seismic monitoring
RF switch	Magnetic drive	Electric device
Interposer	Through Silicon Via	3D IC Technology
Blood glucose sensor	Micro pump	Medical apparatus
Mirror device	Scanner, Switch	Electric device
Ultrasonic probe	Capacitive type	Medical apparatus
Gyro Sensor	Capacitive type	Electric device
Tactile sensor	Piezo sensor	Robot
Accelerometer	Capacitive type	Oil Exploration
Magnetic Heads	Coil	Disk device
Probe pin	Deep RIE	IC tester
Nerve electrode	Minute needle processing	Medical apparatus

Stance in MEMS CORE





Technology (1)



Dry etching of sacrificial layers

Example of processing to etch a sacrificial layer of oxide film



Example of processing for the sacrificial etching of silicon



Example of processing to etch a sacrificial layer of oxide film: cross-sectional view



*Box: Buried oxide

Technology (2)

MEMS CORE

♦ Si DRIE



Laser Dicing





Hamamatsu Photonics K.K.





STEALTH DICING

Laser processing



Au Particle Materials Business (MEMS CORE

- Au particles
 Size: 0.005~ 0.3µm
 Low-temp. bonding at < 200°C
- Hermetic sealing + electrical interconnect in one process





Application : Device sealing, three-dimensional JISSO





Advantages of MEMS Core;

- **1. Development Experience of various MEMS devices**
- 2. Using of the accumulated knowledge
- 3. Support from Tohoku University
- 4. Exact Quick Customer Service

Access to MEMS CORE





By Sendai Subway Namboku Line from SENDAI to Izumi-chuo (about 16 min)

By taxi from Izumi-chuo to MEMS CORE (about 10 min)







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