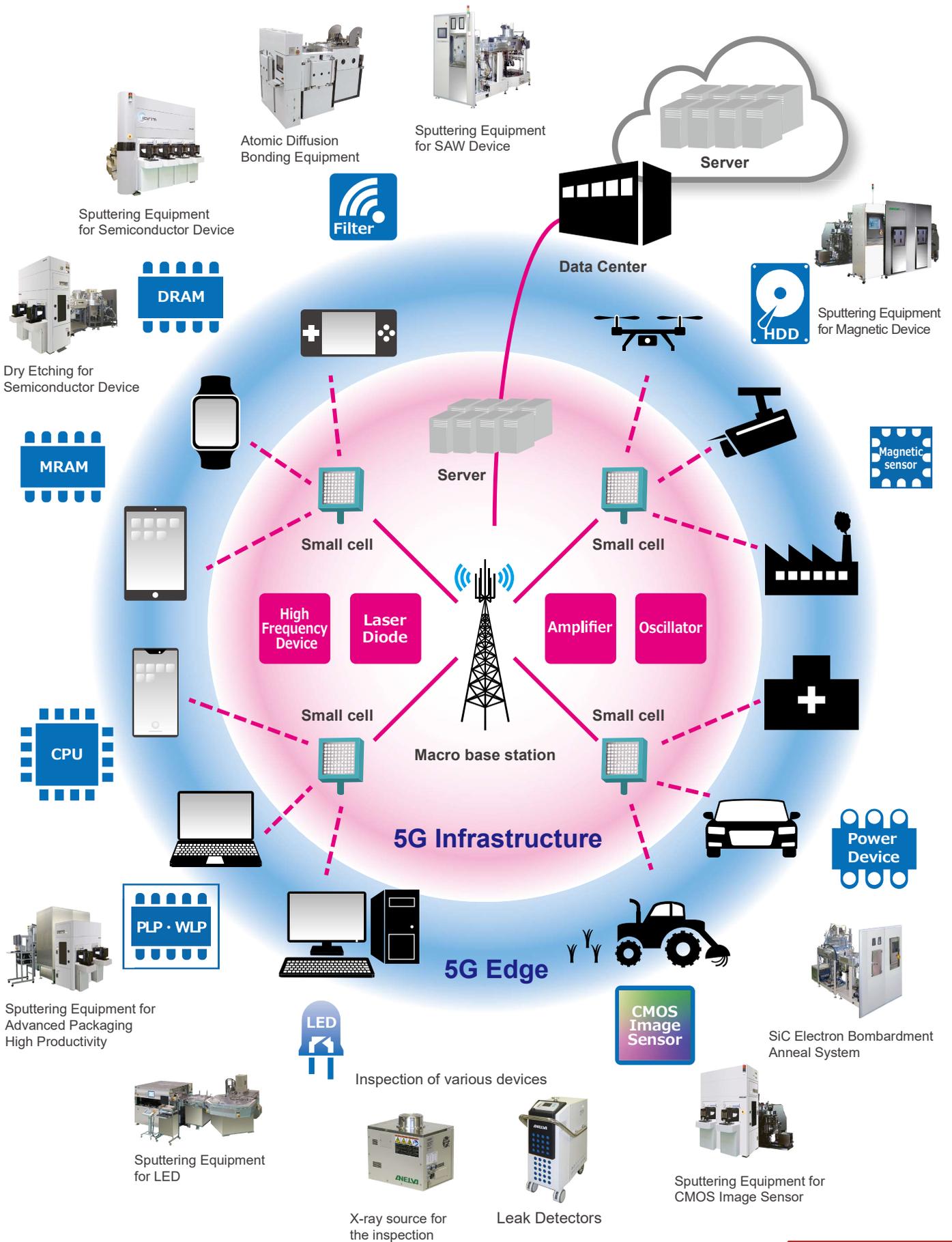


Contribution for various 5G device manufacturing



MRAM Sputtering Equipment NC7900

- ✓ Fine interface control with ultra thin multi layers
- ✓ Compatible with Planar & Perpendicular MTJ formation

Application : MRAM deposition



MRAM Dry Etching Equipment NC8000

- ✓ Micropattern processing free of damage
- ✓ Capable of retaining a high MR ratio even after etching
- ✓ Protective CVD film formation after etching process

Application : MRAM etching



Interconnect Sputtering Equipment IC7500

- ✓ Cathode magnet position (3D) is variable in-situ per each recipe
- ✓ Optional cathode of PCM (Point Cusp Magnet) improves step coverage and suppresses plasma damage

Application : Interconnect metal process



Ultra Thin film Sputtering Equipment FC7100

- ✓ Damage-less metal gate production
- ✓ Precise composition control by co-sputtering
- ✓ Ultra thin (0.1nm unit) and excellent uniformity ($1\sigma < 1\%$) film deposition process

Application : Metal Gate Transistor
CMOS Imaging sensor, ReRAM



Electronic Device Manufacturing Equipment

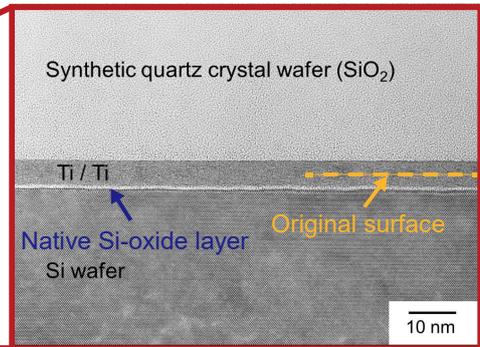
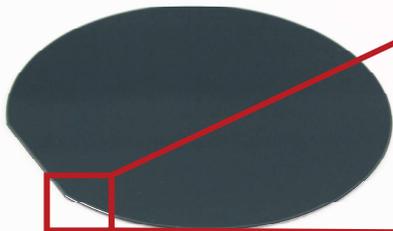
Creating the innovative device with new performance,
structure and process

Atomic Diffusion Bonding Equipment BC7000

Bonding of different materials
Without pressurizing nor heating



Bonding examples
(Si - Synthetic quartz crystal)

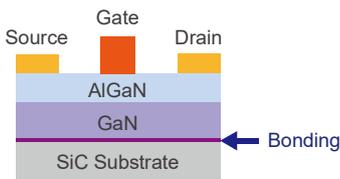


Courtesy of Frontier Research Institute for Interdisciplinary Sciences,
Tohoku University, Shimatsu Labo.

Improvement of thermal conductivity at bonding interface

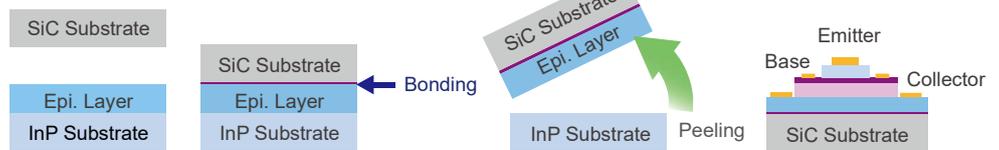
~ High power device for 5G communication ~

GaN HEMT



Enhancement of thermal conductivity
by the bonding of **different materials**

DHBT (Double Heterojunction Bipolar Transistors)

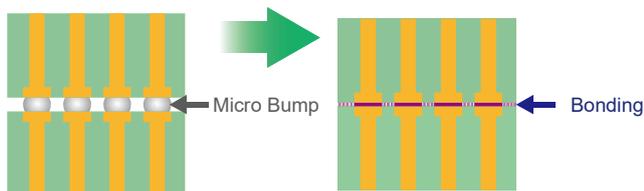


Enhancement of thermal conductivity
by **layer transcription**

Improvement of electric conductivity at bonding interface

~ 3D Packaging ~

CMOS-Image sensor, Memory

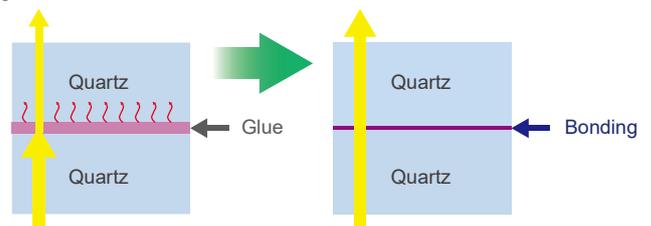


Improvement of electric conductivity **without bump**

Improvement of light transmittance rate at bonding interface

~ Ultra low loss output ~

Optical Device



No thermal damage