

T-Micro

From chip level to 12" wafer level 3D processing

Tohoku-MicroTec Co., Ltd.

We provide cutting-edge 3D-IC R&D Prototyping and Pilot / Low-Volume Production Service

➤ State-of-the-art technologies

- 200mm and 300mm 3D process engineering lines and advanced technology platforms
 - design / layout / mask making
 - wafer / chip thinning
 - forming TSV on chip / wafer (front side / backside TSV)
 - redistribution routing
 - both side u-bumps formation on chip / wafer
 - chip / wafer stacking

➤ 3D stacking LSIs prototype manufacturing service

- Prototyping of proof of concepts using commercial/customized 2D chips
- die-level 3D hetero-integration with backside TSV technology

➤ Support your small-volume, special customized 3D productions

- base-line process set-up for the pilot production
- facilitate your product development

➤ 2.5D interposer R&D foundry and pilot production service

- Large area interposer
- Interposer with passive devices

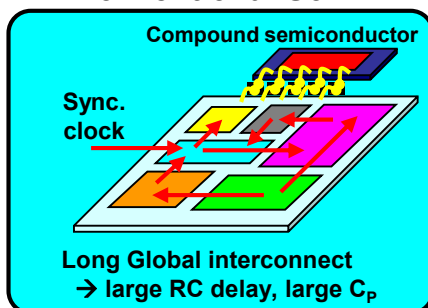
➤ Development innovative 3D stacking technologies for creative 3D products and applications

➤ Supply IP and special customized TEG wafers for process-induced reliability characterization

Advantages of 3D IC

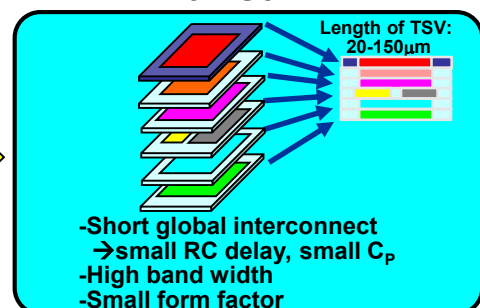
SoC: System on Chip (System LSI)

Conventional SoC



segment 2D-SoC
into functional
block

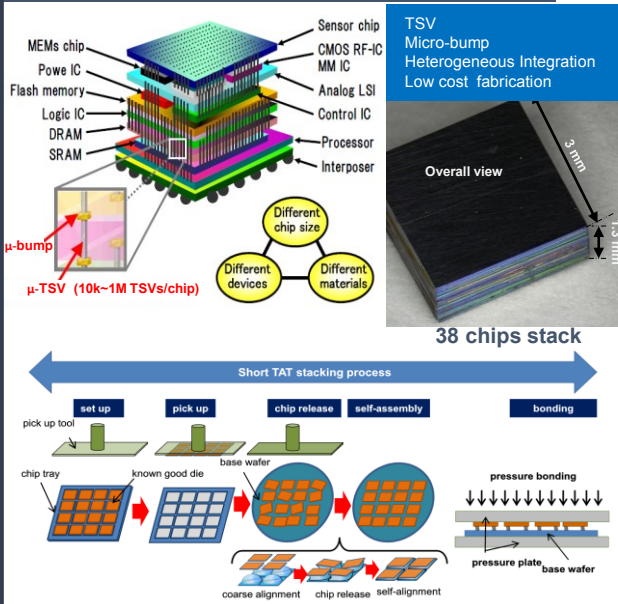
3D-SoC



1. Maximization of electrical performances
2. Increase of circuit density
3. New Architecture (Hyper-parallel processing, Multifunction, etc)
4. Heterogeneous integration
5. Cost reduction
6. Realization of high performance detector with ~100% area factor in chip

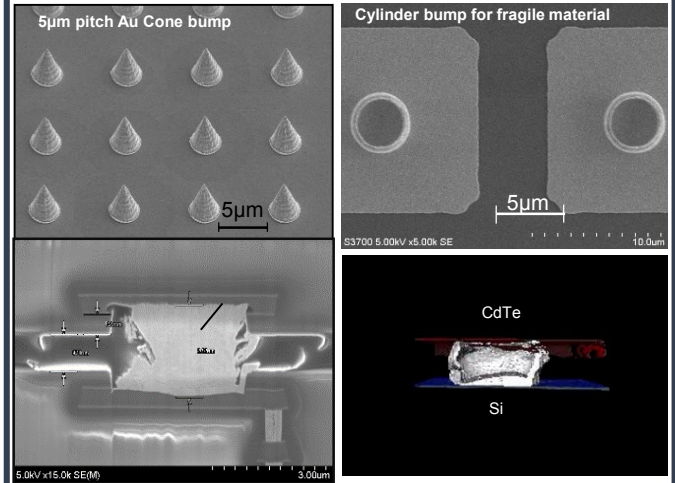
Technology / Samples

Low cost 3D-Soc Manufacturing Technology

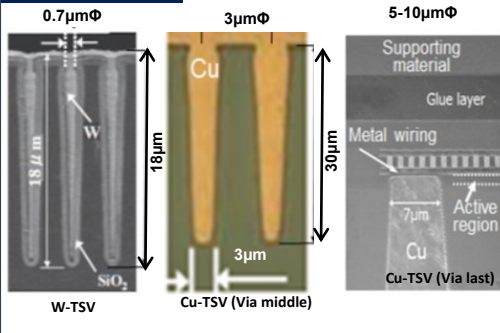


Au micro-bump connection

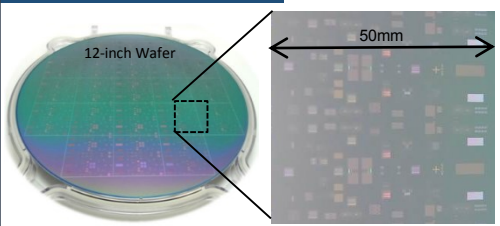
We focus on a versatile bonding technology for silicon LSI, compound semiconductor, and microelectromechanical system devices at temperatures of less than 200 °C for heterogeneous integration. Our new gold (Au) micro-bump technology is one of the promising candidates for this purpose.



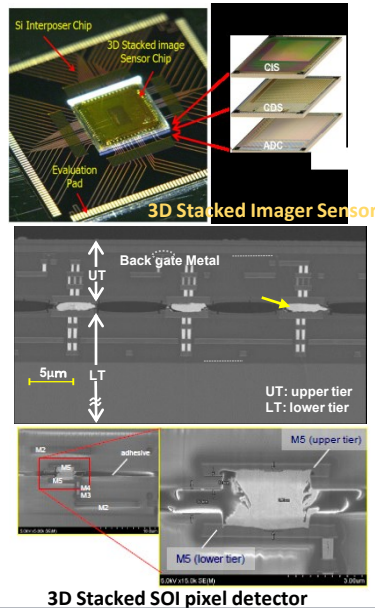
TSV Process



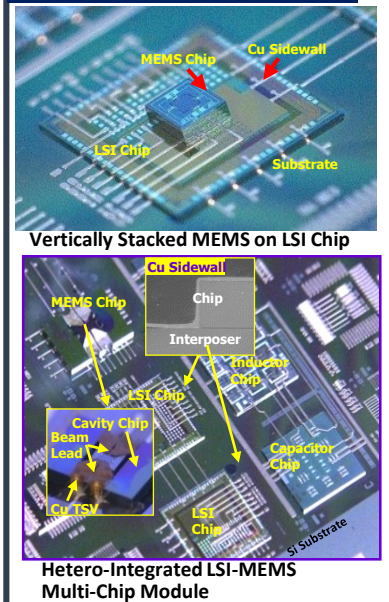
2.5D Interposer



3D-Sensor/Detector

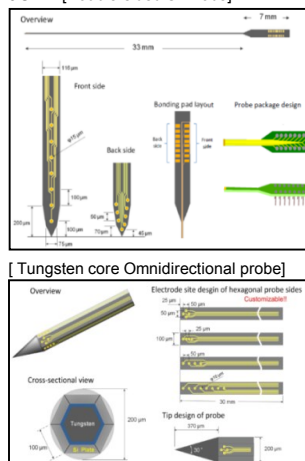
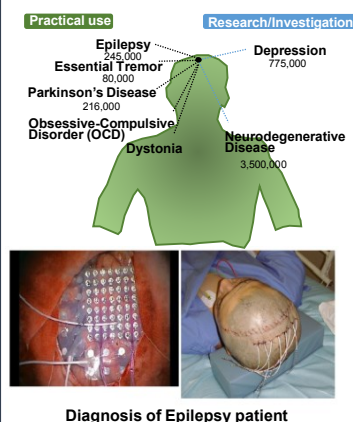


3D-MEMS/Hetero-Integration

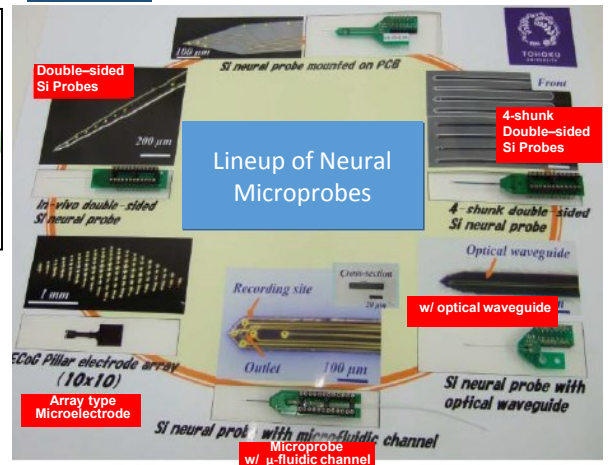


MicroProbes for Neural recording

- Diagnosis and treatment for brain disorder [Double-sided Si Probe]
- Research for BMI/BCI



Others



200mm/300mm 3D Integration Process Facilities



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