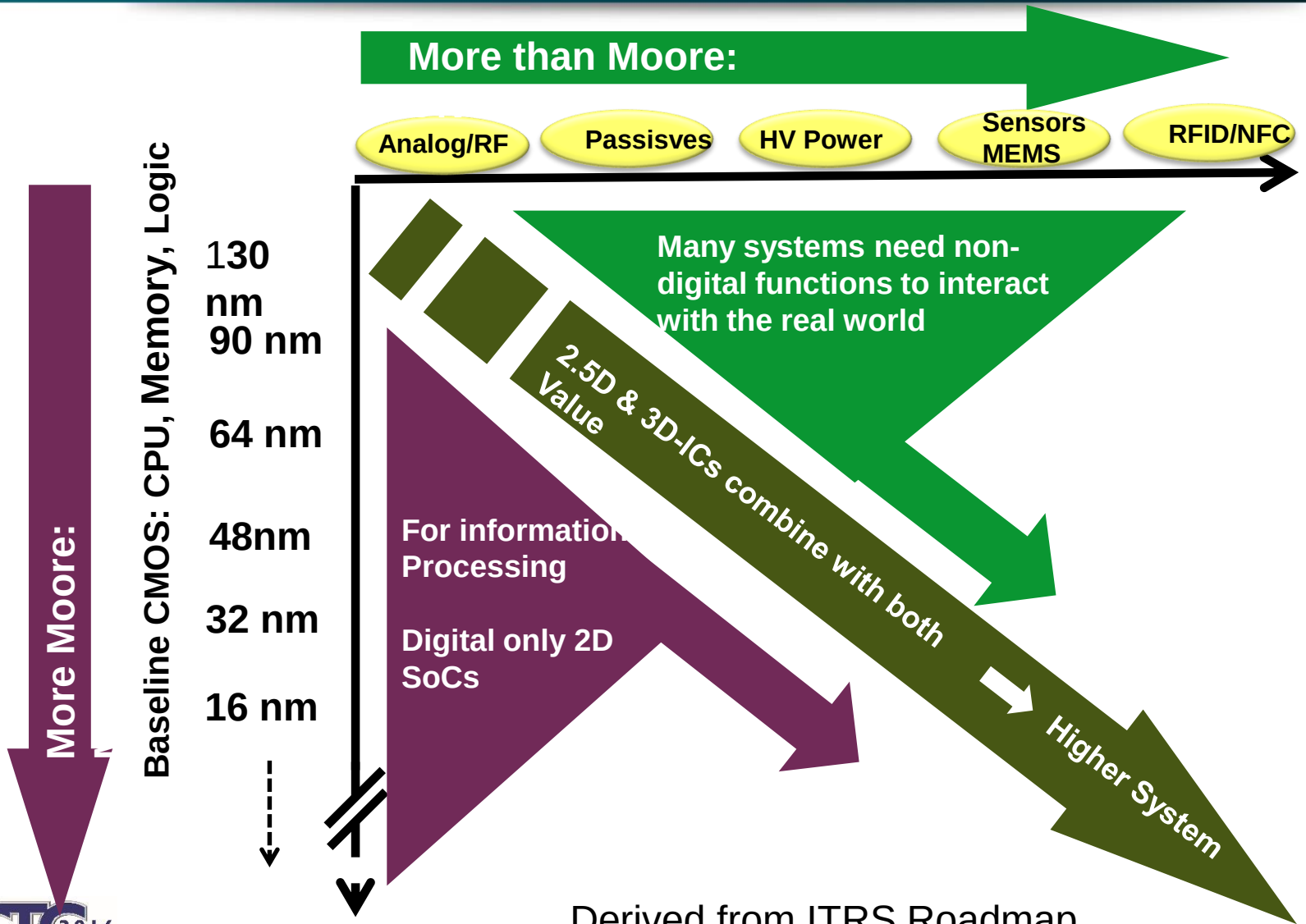
ECTC 2016
The 66th Electronic Components and Technology Conference

Dr. CP Wong

Sr. Advisor of NCAP

“More Moore” and “More than Moore”



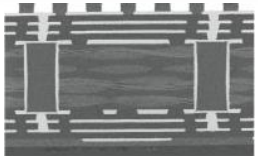
Derived from ITRS Roadmap

National Center for Advanced Packaging China(NCAP)

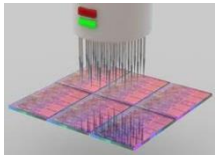
- **Founded in Sep.2012**
- **Platform for advanced packaging**
- **2200 m2 CR**
- **Class10/100/1000/10000**

NCAP Advanced Packaging Facility

WL process
- TSV
- RDL
- Bumping
- TBDB
- C2W FC
- W2W bonding
- Molding
- Ball drop
- Singulation

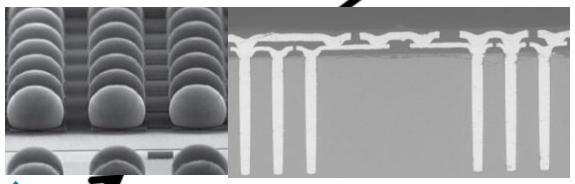


Substrate



Final Test
Reliability Test

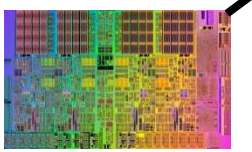
Package Assembly



Wafer bumping/TSV

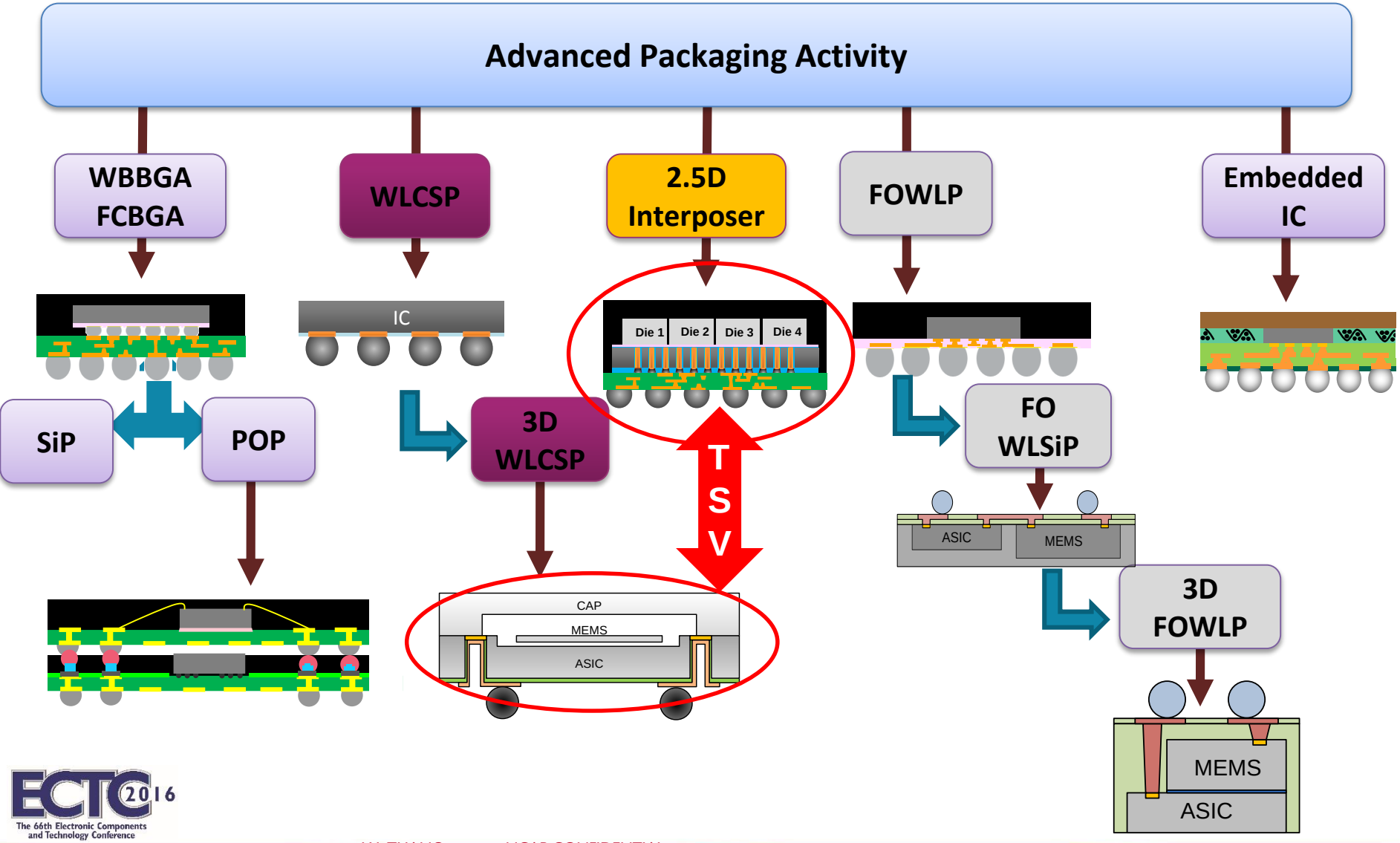
SiP Design

Fab



IC Design

NCAP research activity

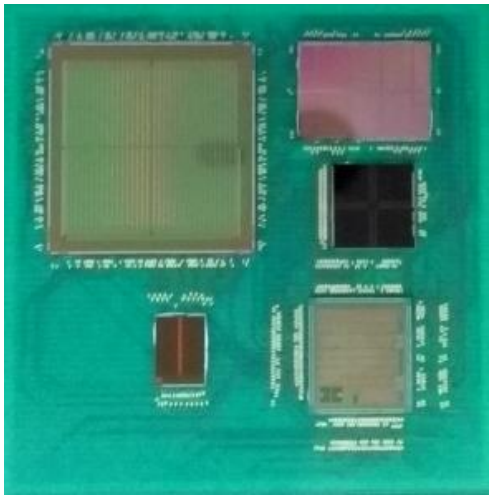


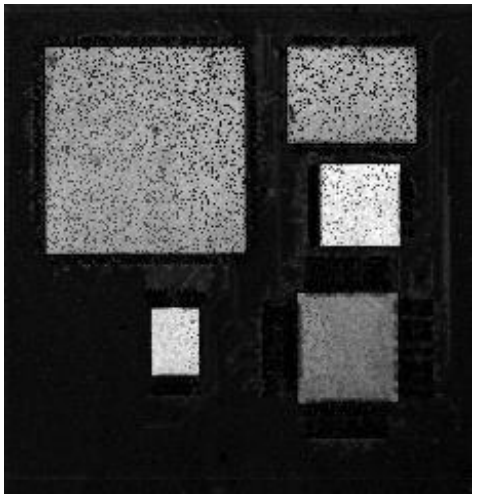
NCAP SiP Package Capability

5 dies wirebonding BGA SiP

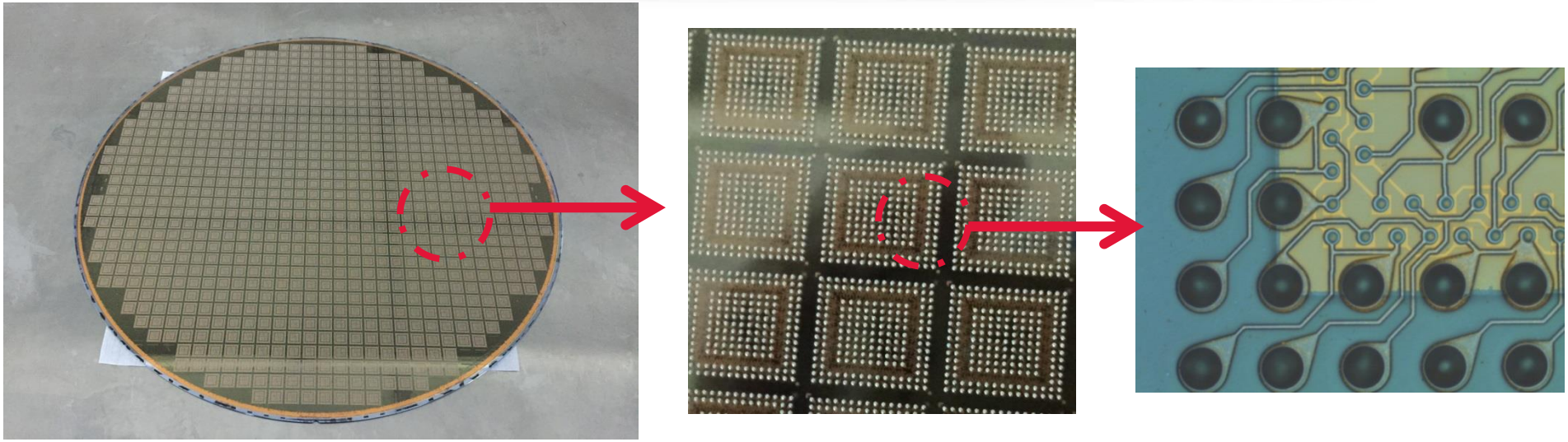
PKG type: Multi-chip WB LGA

- **PKG size: 31 * 31mm;**
- **Total 5 dies,**
  - **max die size: 13.6mm*13.3mm;**
  - **~1000wires;**
- **Small distance (<350um) from bond finger to die edge**





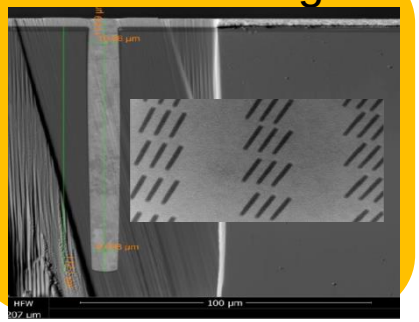
Fan-out WLSiP



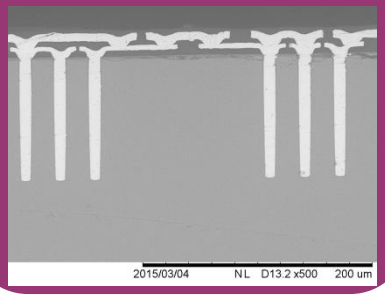
- Heterogeneous chips can be integrated (SiP) through:
  - Wafer reconstruction
  - RDLs in the Same layer (2D)/Different layer (3D)
- No Wire Bonds, No wafer matching!
- Low cost!

2.5D system integration platform

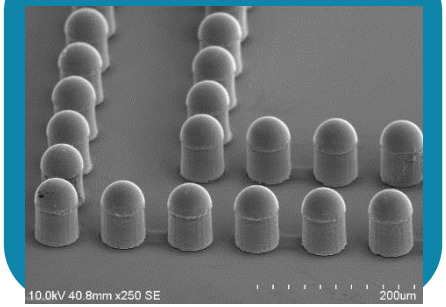
TSV Plating



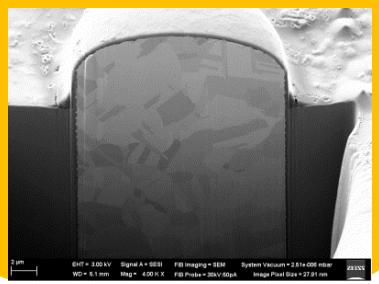
TSV + RDL



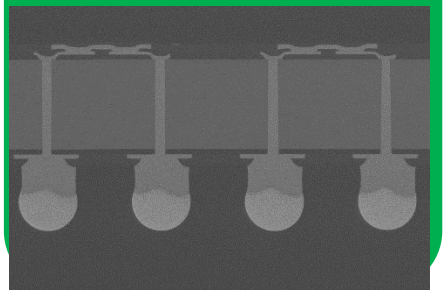
ubumping



Backside Reveal

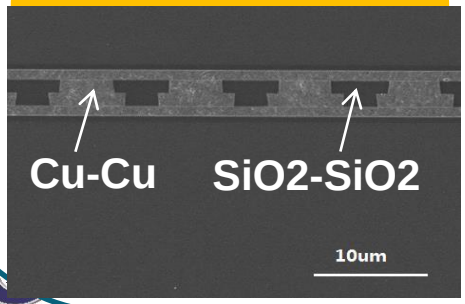


X-section

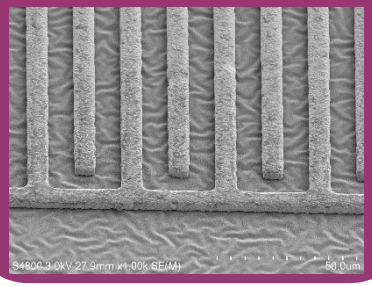


Thinning

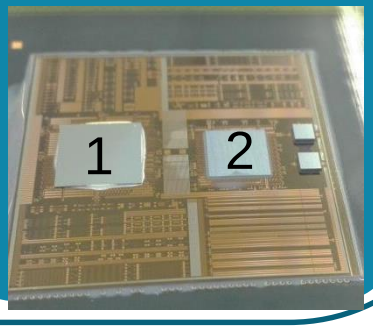
W2W bonding



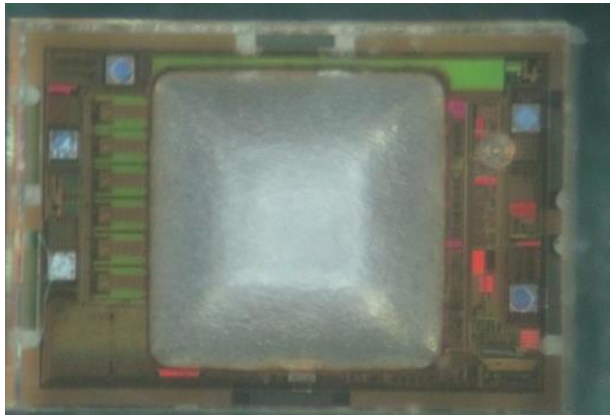
RDL

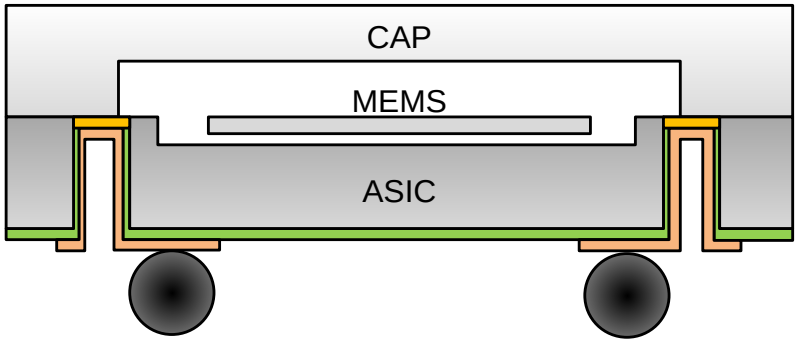


Chip stacking

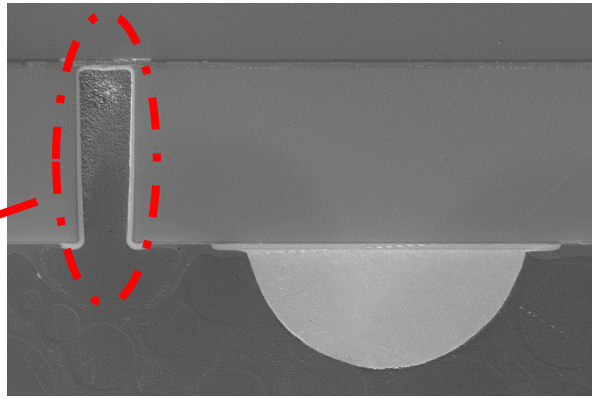


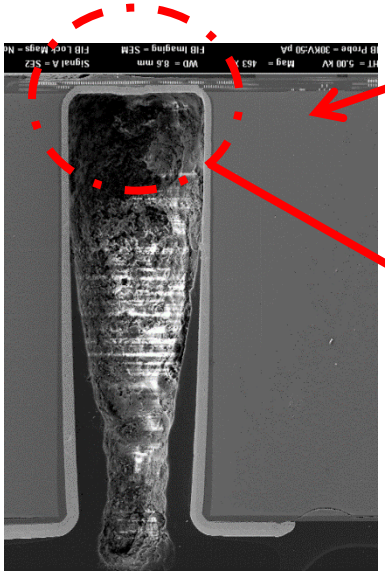
MEMS 3D WLCSP

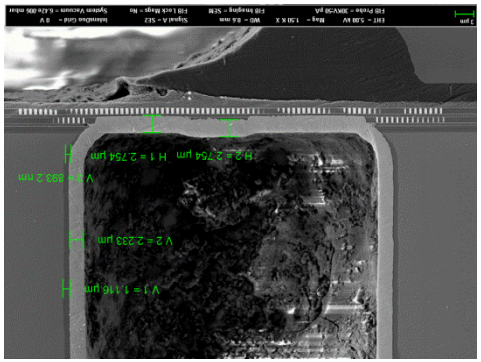




MEMS chip with TSVs







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NCAP CHINA

Vision

World Class R&D and Commercialization Center
for Adcanced Packaging & System Integration

Mission

Innovate Incubate Influence Impact

Value

Collaboration Innovation Perseverance Excellence

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To address the following aspects in their presentation

§ Current challenges with Moore's Law:

- Is Moore's Law death or not? With increased functionality needs and rising scaling costs, will Moore's Law become a niche trend?
- What are the game changing research activities happening in your organization that could lay the ground for mainstream applications in the future?
- Importance of research in further evolution of semiconductor industry: what innovations and technologies are needed for future devices and systems?

for NCAP: *Please prepare a 10min presentation addressing NCAP's activities and the above questions.*