The Thermal NanoLens brings the advantages of SIL imaging to both downward and upward looking thermal emission microscopes.

Features

- Numerical aperture (N.A.): 2.6
  - Maximum resolution: approx. 1 μm
  - Sensitivity: > 3 times (compared with conventional type)
- Available for both downward looking system and inverted system
- Swappable SIL Cap architecture
  - Swapping between two types of SIL caps that cover Si thickness from thinned chip to full wafer thickness.
  - SIL cap is keyed for straightforward mounting.
  - Lens is automatically aligned on a device surface to get the best contact between a lens and Si surface to collect light signal most efficiently.

Applications

- Backside observation of advanced devices
  - Thermal photoemission analysis
**Case study**

**Purpose**
Evaluation of a Thermal NanoLens resolution by using an actual device

**Method**
Sample: A commercially available 38 nm DRAM with decapsulation.
Take a pattern image using an InSb camera

**Results**

![](Image)

**Conclusion**
Acquired image has no distortion. FOV 340 μm × 270 μm
The 100 μm × 90 μm size digital zoomed image shows detailed structure clearly.

**Principles**

Due to the high reflection index of Si, light passing through the Si layer is not collected efficiently by an objective lens. By putting a Si lens directly on the Si surface, all light that has been reflected at the boundary between Si and the lens can be collected and focused to a high N.A. objective lens. Higher light collection efficiency improves image resolution drastically.

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