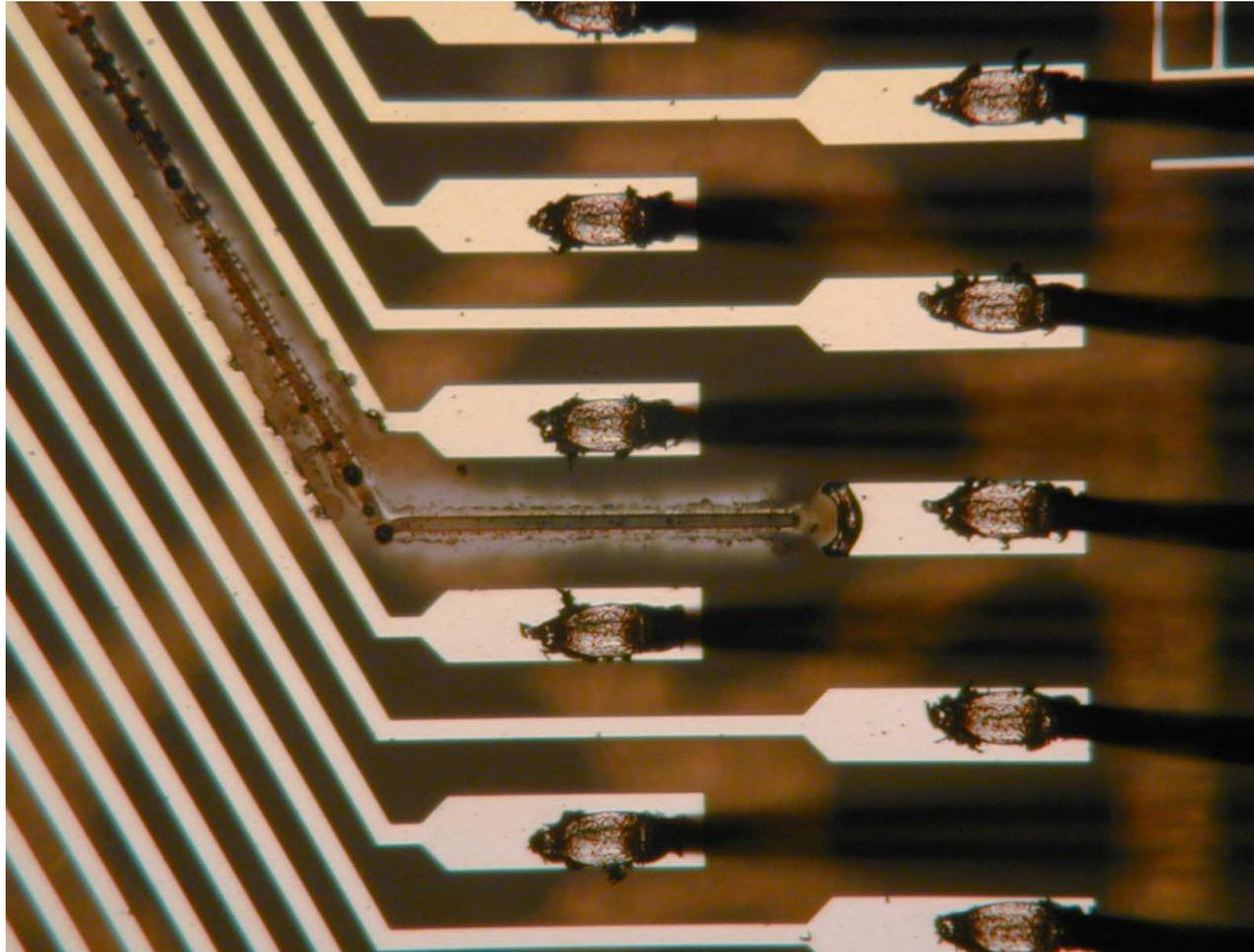


# Zapping a chip in a module in Japan

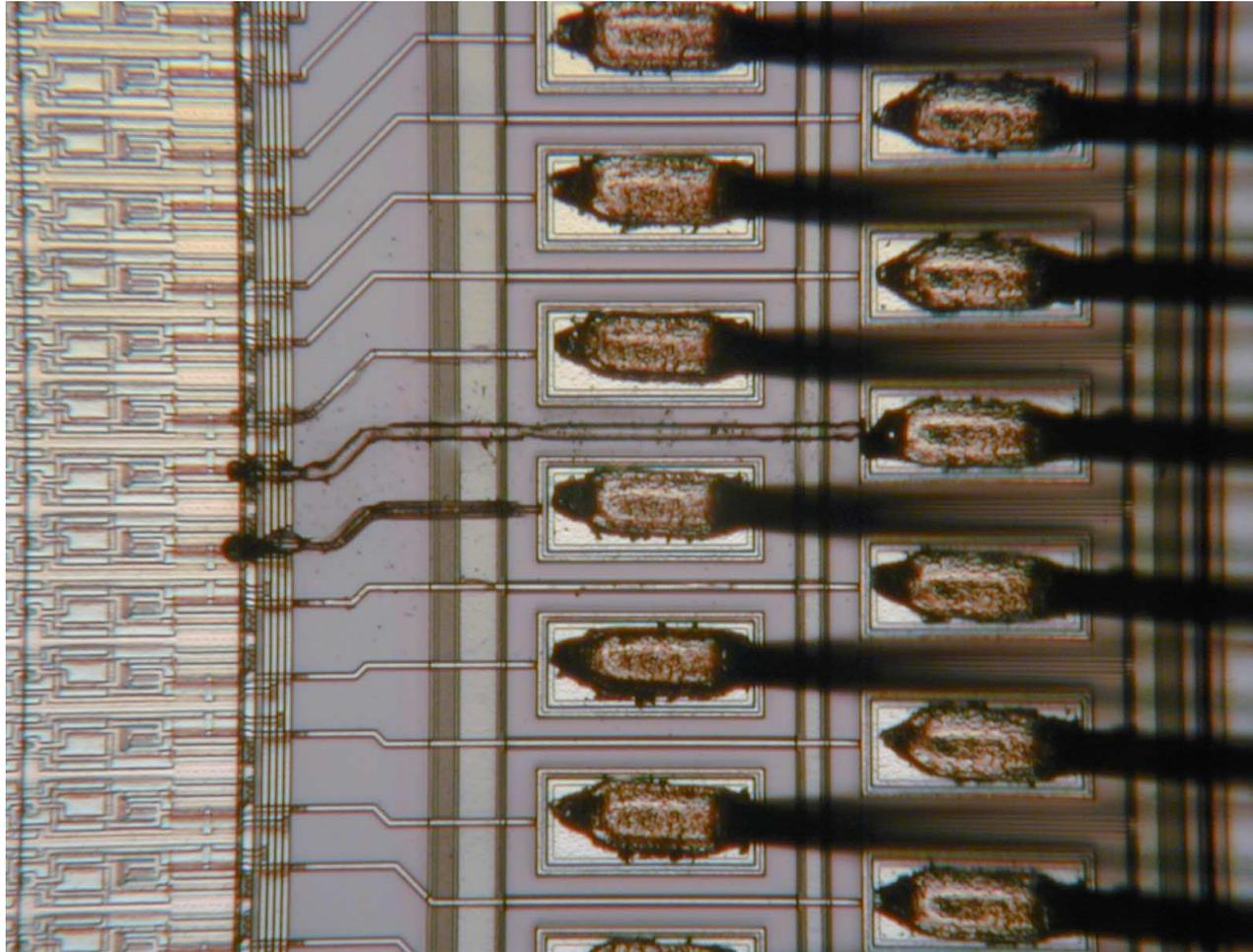
- Hybrid/Module - 20220170200469
- Only one incident out of about 500 modules
- All chips alive in Hybrid QA, then one chip (M00) found dead in Module QA
- Visual inspection found a burned trace on PA, and further, burned traces in a chip

# Burned trace in PA



Y. Unno, SCT week, 23 Sep 2003

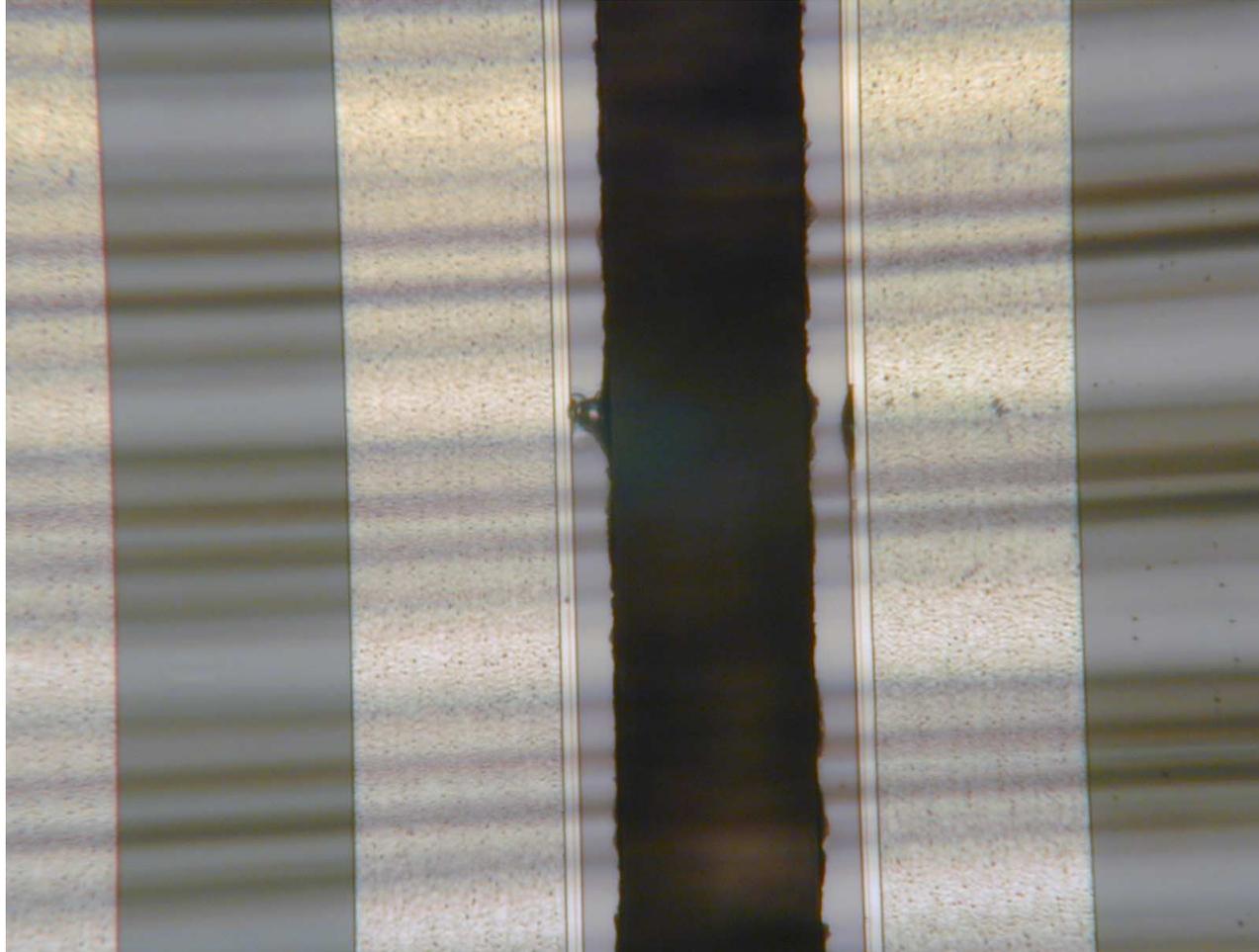
# Burned trace in chip



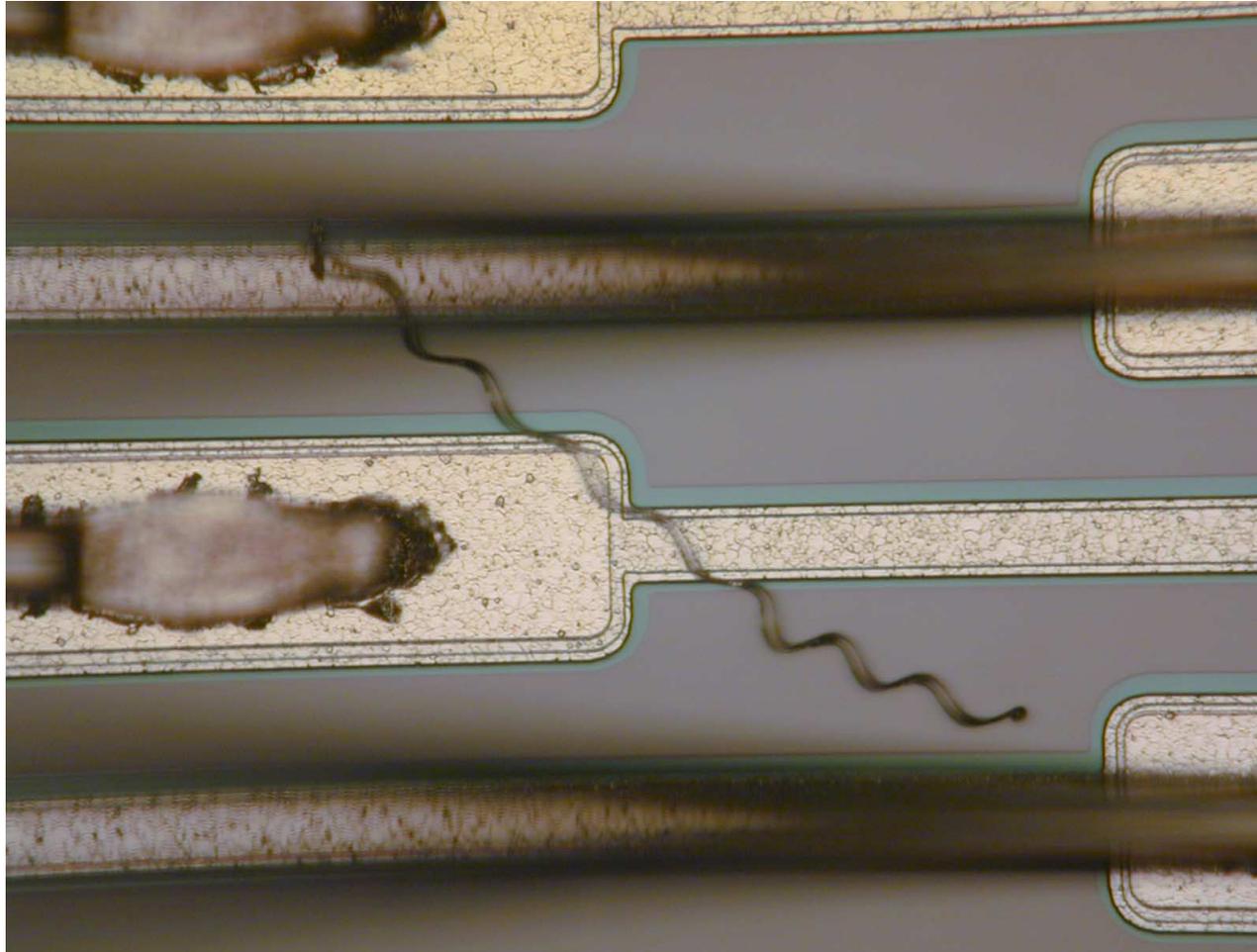
# Looking for the source

- Visual inspection revealed a trace of lightning in the edge of the sensor (and maybe in the Al metal?)
- A "shaved coil" was found nearby on the surface on sensor. The shaved coils from the Al wire are seen, rare but occasionally. This shaving may be specific of the wire-bonding machine
- The ends of the "coil" seems rounded because of lightning
- Such a "shaved coil" caused discharge in a module previously

# The source?



# Shaved coil



# Conclusion

- The zapping of a chip was caused by the short between an Al wire (GND) and the sensor edge (HV) due to a metal debris, "shaved coil"
- There is a HV resistor of 10 kOhm to the backplane, but this did not protect the chip from the short
- A pinhole strip exists in a sensor, strip no. 208, which did not correspond to the strips of the zapped chip (strip no. 1-128)
- A careful investigation is required for the cases where the HV reaches or a large current flows into the chip through pinhole strips, e.g. shortening the body of sensor by the splash of beam
  - can be simulated with a flash of light?