IMINA TECHNOLOGIES

High Precision Robots for Microscopes

Semiconductor Test and Measurement Solutions

Benoît Dagon \ CEO, co-founder

www.imina.ch

TRUSTED BY LEADING SEMICONDUCTOR COMPANIES AND RESEARCH INSTITUTES AROUND THE WORLD

onsemi, tsmc, intel, SAMSUNG, Apple, Western Digital / SanDisk, AMD, BMW, Qualcomm, TDK - MICRONAS, Static Control, ANALOG DEVICES, NASA JPL, dialog SEMICONDUCTOR, MICROCHIP, NUS National University of Singapore, elmos, KIST Korea Institute of Science and Technology, Fraunhofer CAM, qorvo, NPL National Physical Laboratory, Caltech, life.augmented, imec, UNIVERSITY OF CAMBRIDGE

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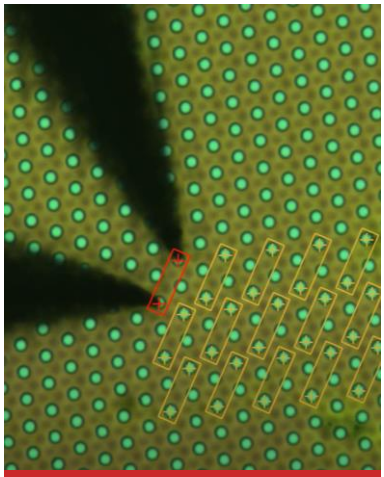
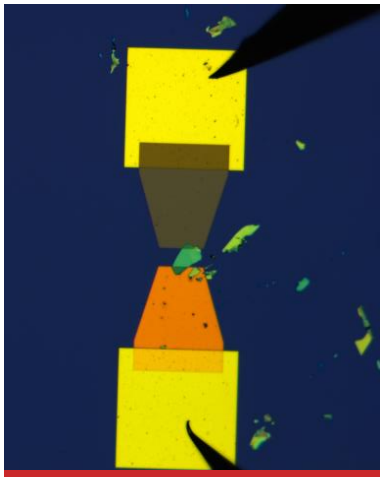
APPLICATIONS AT MICRO SCALE



Electrical Microprobing



Materials Characterization

Manipulation & Positioning

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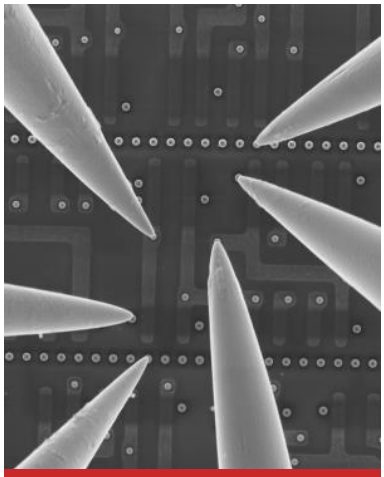
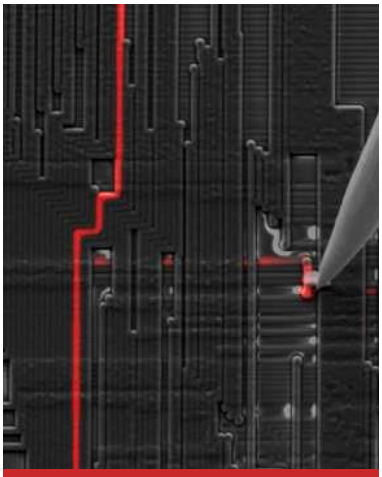
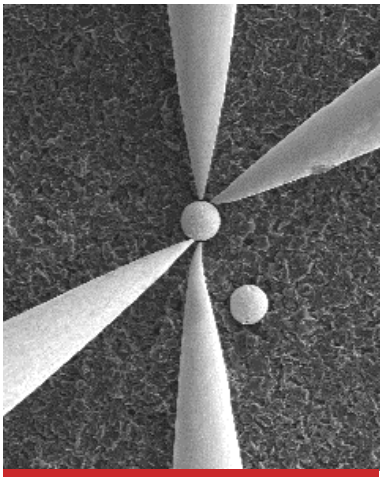
APPLICATIONS AT NANO SCALE



Electrical Nanoprobing



Semiconductor Failure Analysis



Characterization & Manipulation

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TECHNOLOGY

A revolutionary mobile motion technology

High level of flexibility
- Adapt your setup to your daily experiments and samples
- By hand before closing the chamber or remotely, *in situ*

Easy tips replacement
- Compatible with industry a probes (1um down to 5nm tip radius)
- Fast probe exchange

Intuitive to control
- Movements along robot's natural axis
- Software controlled for an intuitive user experience
- Short learning curve

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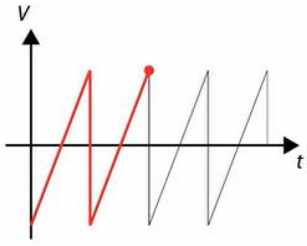
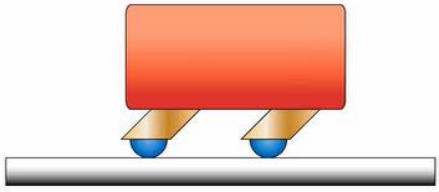
PIEZOELECTRIC ACTUATION





Stepping mode

https://youtu.be/ec8Au2tvtJc

TOOLS

Electrical Probing

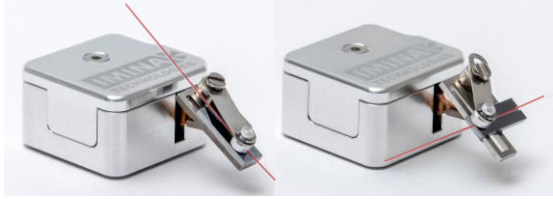
Tungsten probe tips

- Various lengths (15mm to 38mm)
- Various tip radius (from 5nm to 1um)

Various probe holder size/angle

- To fit every setup/application

Optical Fiber Holder



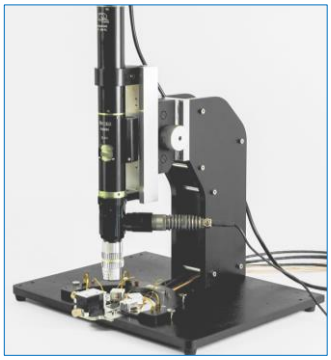
Two optical fiber holders

- With different approach angles
- Designed for standard Ø125µm cladding fibers

IMPORTANT
End effectors have different geometries and weights!

ROBOTIC SUB-MICRON TEST AND MEASUREMENT SOLUTIONS

NANO
Electron Microscopes



MICRO
Optical Microscopes

Precisio™ software
Hardware control, measurement acquisition, processing and reporting

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NANO LINE

SHORT WD

IMMERSION MODE

TILTED ANGLES

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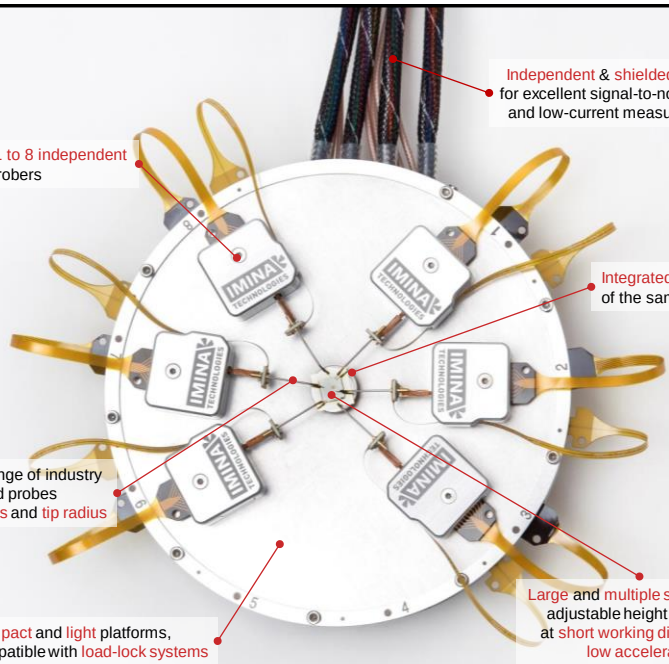
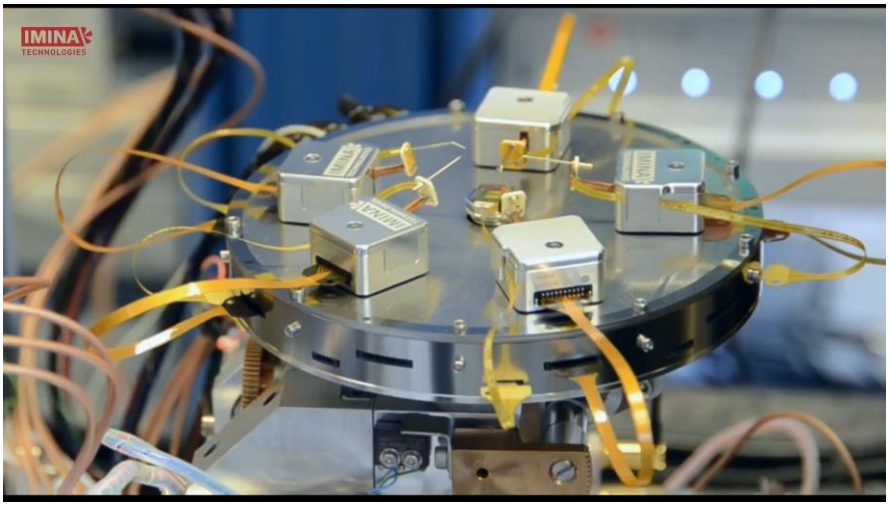


NANOPROBING EXPERIMENT WORKFLOW



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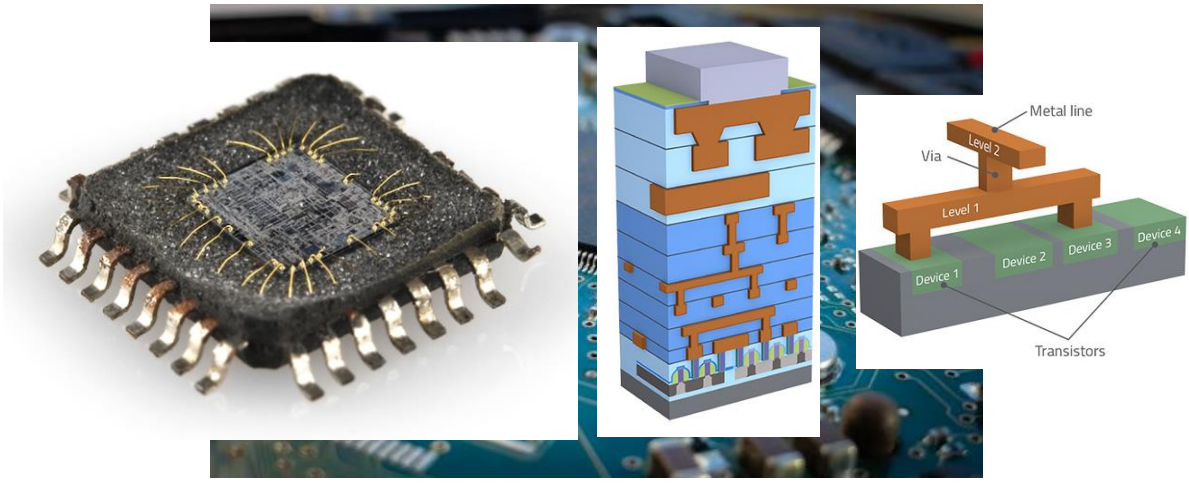
INTEGRATED CIRCUITS



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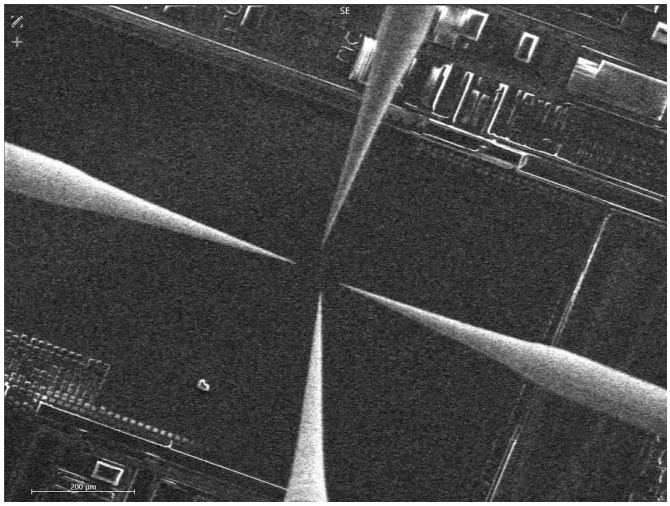
TRANSISTOR CHARACTERIZATION (PMOS, 180 NM)



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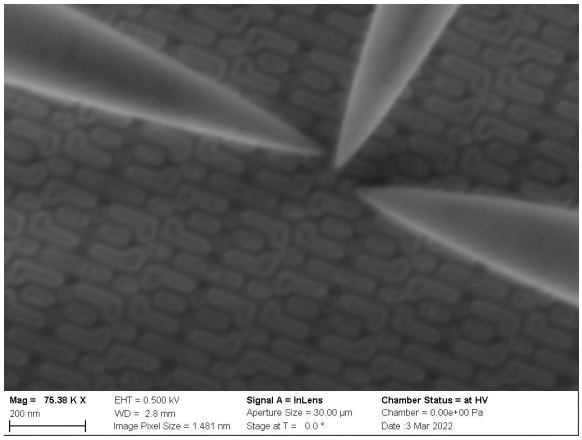
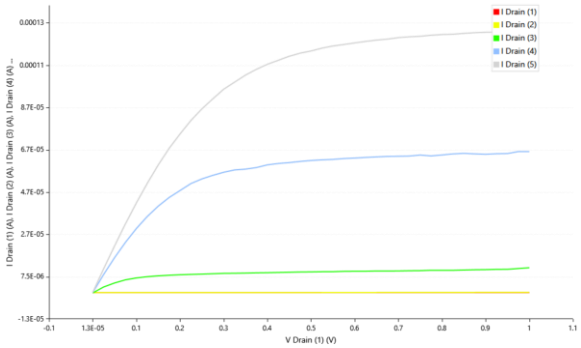
TRANSISTOR CHARACTERIZATION (NMOS, 7 NM)





https://imina.ch/en/applications/7nm

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CAPTEUR DE FORCE À RIGIDITÉ RÉGLABLE

POURQUOI ?

- Détecter et maintenir le contact entre la sonde et l'échantillon afin de
  - Faciliter le positionnement (ex. qualité d'image)
  - Compenser des dérives (ex. thermique)
- Assurer un contact répétable pour fiabiliser les mesures.
- Réduire les risques d'endommager l'échantillon et/ou la sonde.

DEFIS

- Haute sensibilité au contact car forces très petites à mesurer

  et
- Haute rigidité lors des déplacements afin que les sondes n'oscille pas.
- Compatibilité avec des porte outils et des sondes variées.
- Robuste à la manipulation par un opérateur.

BONNE CHANCE !! ☺

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THANK YOU FOR YOUR ATTENTION!

> Follow-us on LinkedIn

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