# Educating the next generation of packaging experts

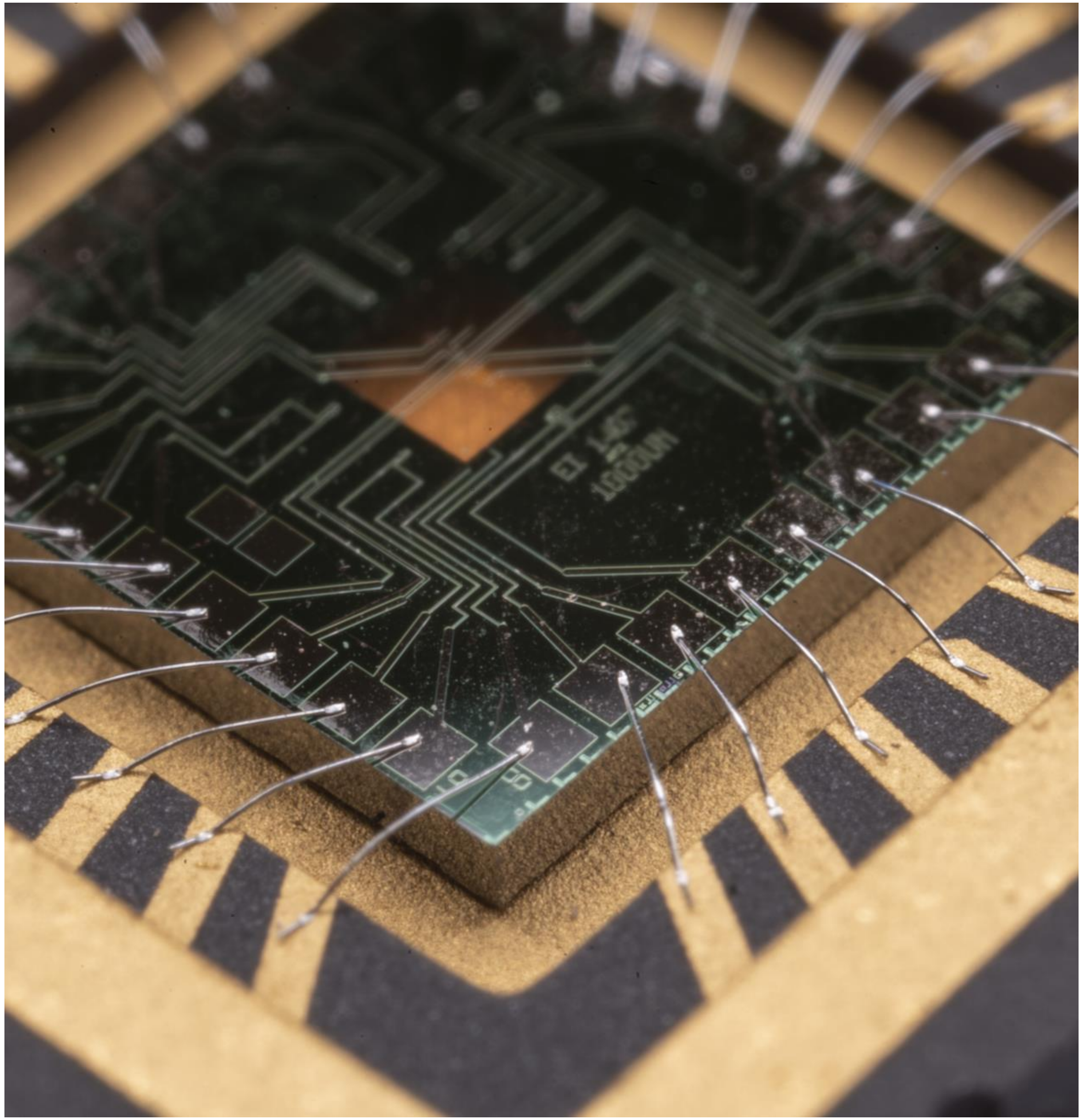
Joop Bruines

CITC

Chip Integration
Technology Center

# CITC's educational ambition

- Securing the future of the semiconductor industry in Europe
- By… contributing to the training and skills of people that align with industry needs
- People who are in high demand – now and in the future



# Providing access to education

## Semiconductor Packaging

- For BSc candidates and industry and academic professionals
- Theory and practice

## Supervise students

- Internships
- Graduation projects
- PDEng and PhD students

## Enthuse the young

- Primary and secondary school
- Guest lectures
- One-day internships

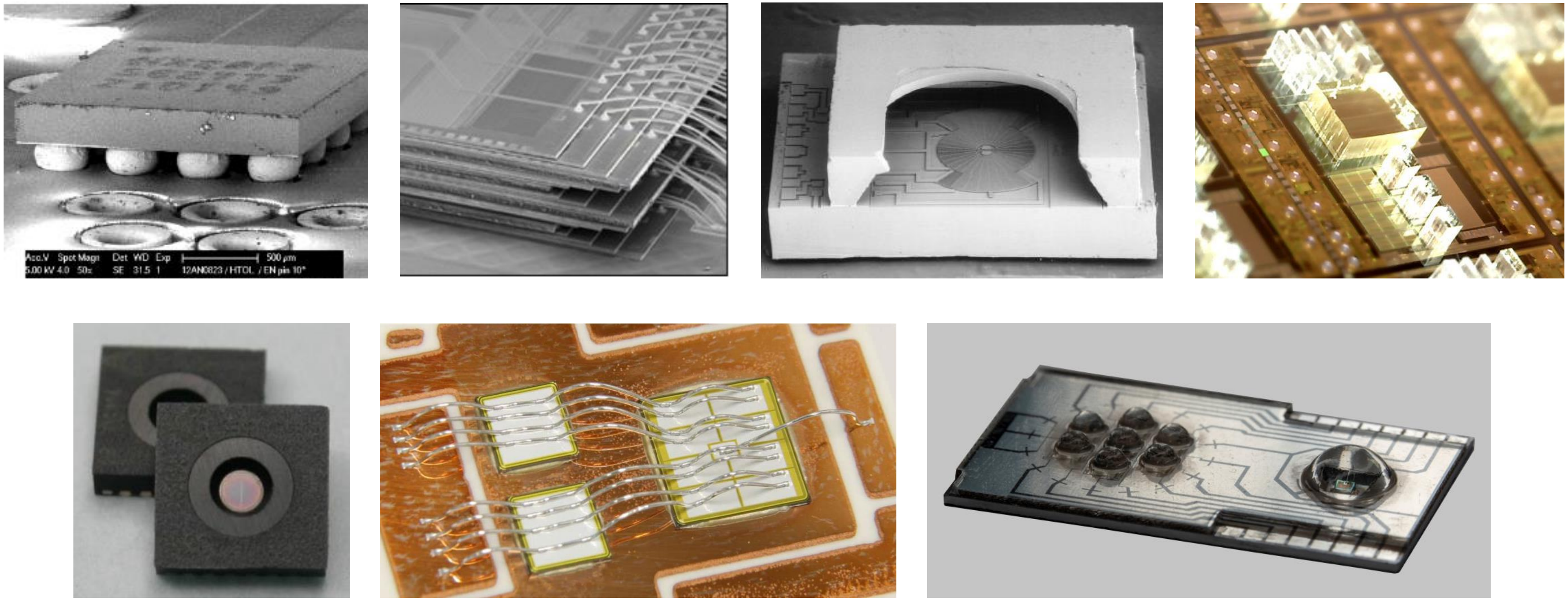
# Semiconductor Packaging University Program

- Initiative of CITC, NXP, Nexperia and Ampleon
- Developed together with HAN University of Applied Sciences, TNO and TU Delft
- Provides a connection between education and industry
- Training in all relevant aspects of chip packaging and supporting disciplines

**Want to broaden your horizons in semiconductor assembly and packaging?**

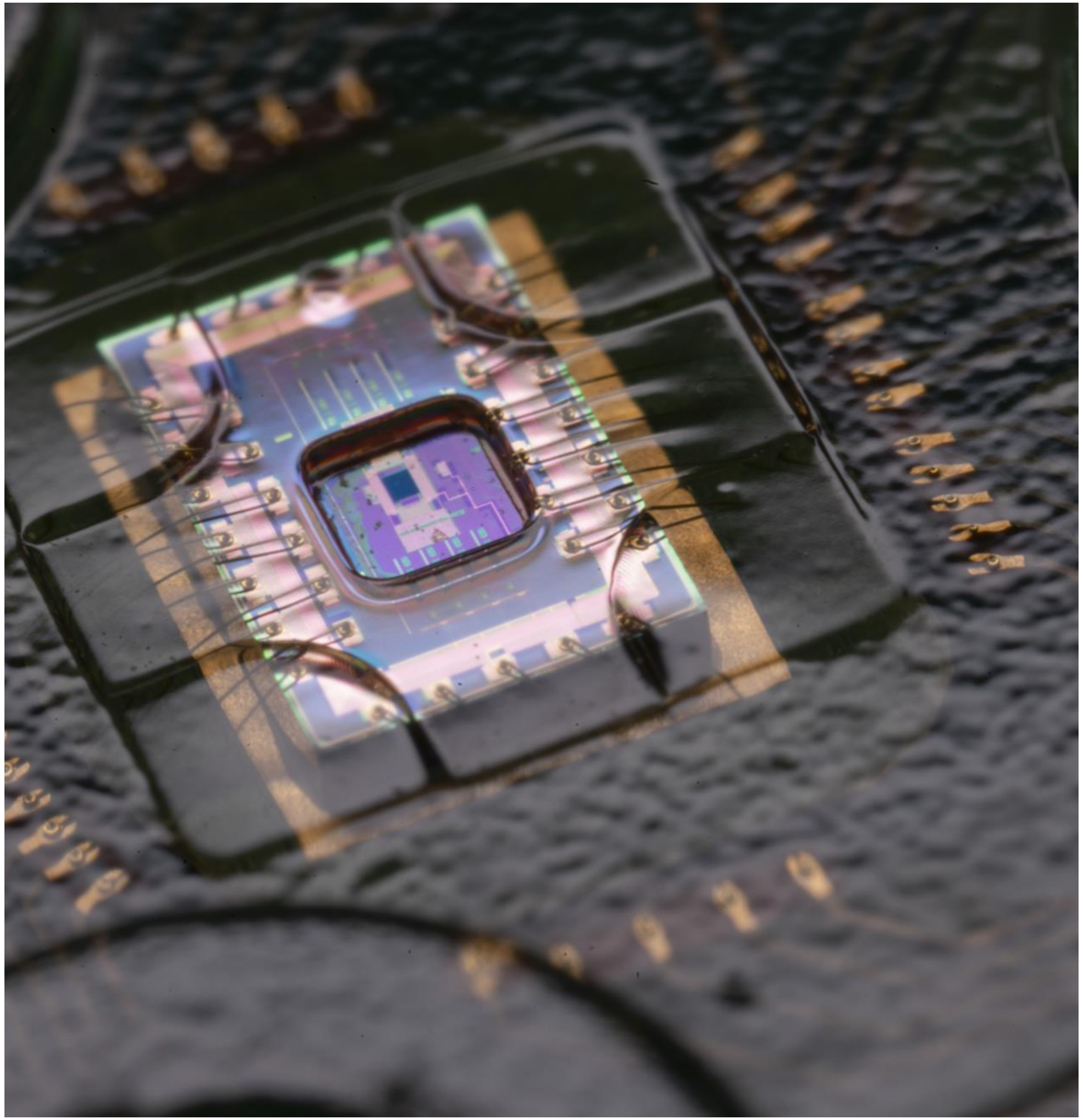
Follow the unique CITC/HAN differentiation minor and distinguish yourself from your fellow students for a career in the semiconductor industry.

# Integration and packaging challenging?



# Unique, industry-driven program

- Learn from the experts
  - Lecturers are industry experts with years of practical experience
  - Student visits to leading semiconductor manufacturing and equipment companies included
- Multidisciplinary class
  - Group consists of both bachelor students and professionals from industry and academia
  - Various educational backgrounds
- Valuable skills
  - Students learn to collaborate in a cross-functional environment
  - Work with people from different cultures and in different situations



# Program content

## Course for industry and academic professionals

- Seven-day course – 7 consecutive Mondays
- Optional: week of practical work
  - Selected number of participants only
  - Under supervision of CITC
  - Specific packaging challenge

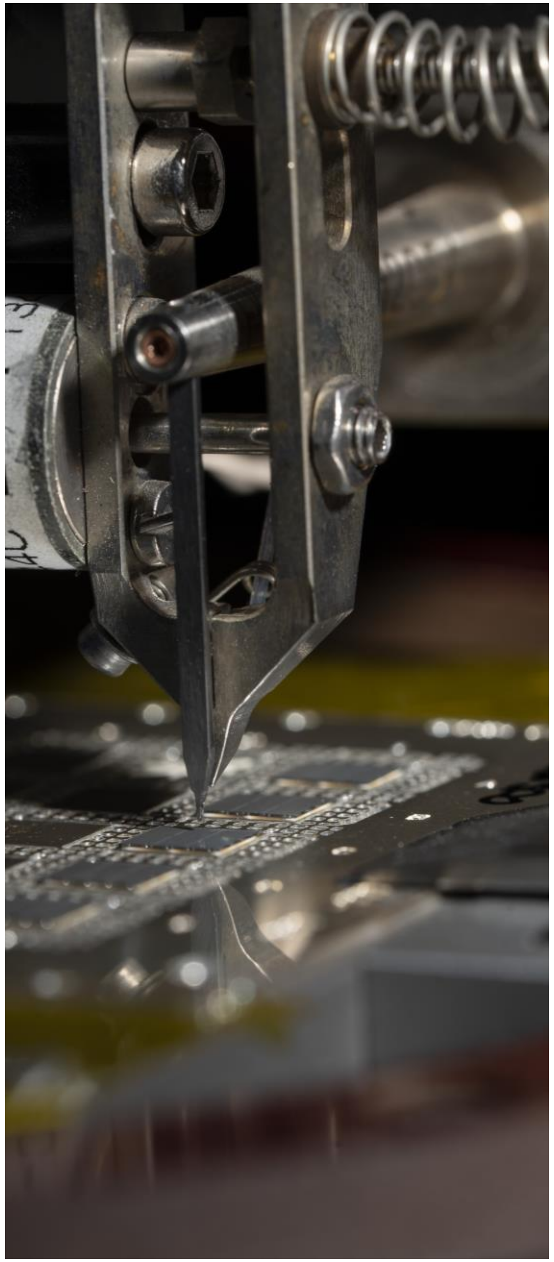
## Minor for bachelor students*

- Same seven-day course lectures as professionals
- Industry orientation program with
  - Additional and supplementary lectures
  - Weekly individual assignments
  - Workshops
  - Company visits
- Term-1 closed by written and oral exam
- Practical team assignments during term-2
  - At CITC and industrial partners
- Additionally, self-studies on selected topics

** Electrical engineering, mechanical engineering, mechatronics, automotive, chemistry, technical business administration*

# Learning objectives

- Understand the semiconductor world
- Communicate with the IC front-end, assembly and packaging experts
- Gain insight into the cross-functional challenges in IC packaging
- Work in a systematic way, according to protocols and standards
- Design and implement prototypes to customer specification
- Analyse electrical test and reliability data



# Program minor term-1

- Get acquainted with the industry
  - Gain general insight into the industry
  - Visit companies

- Learn about chips and their packaging
  - Microelectronics and their packaging
  - Integrated photonics and their packaging
  - Application requirements and trends
  - Simulation and advanced materials
  - Reliability, quality and testing

# Program minor term 2

- Tackle a challenging problem
  - Work in a team
  - Create a prototype to demonstrate concept and feasibility
  - Practical work at industrial partner and CITC

- Self-study specialization in two disciplines:
  - Thermo-mechanical simulation
  - Advanced packaging materials
  - Quality control and reliability
  - Industrialization and equipment
  - Testing and data analysis
  - Integrated optics
  - …

# People trained in previous editions

# Next edition

- … begins on Monday August 28
- Already registered:
  - 13 bachelor students (3 from RWH)
  - 16 academic professionals
  - 4 industry professionals
- Registration ends on July 3rd - you are welcome to join!

**Joop Bruines**

*Education consultant*

E: joop.bruines@citc.org
P: +31 6 53 71 78 39

CITC
Transistorweg 5T
6534 AT Nijmegen

T: +31 85 483 5600

E: info@citc.org

# Thank you for your attention!

Chip Integration
Technology Center