



**Point-One**

Pole of innovative technology on nanoelectronics and embedded systems

**MEMS**Land

*Cost Effective MEMS to Develop a Sustainable High Tech Business*

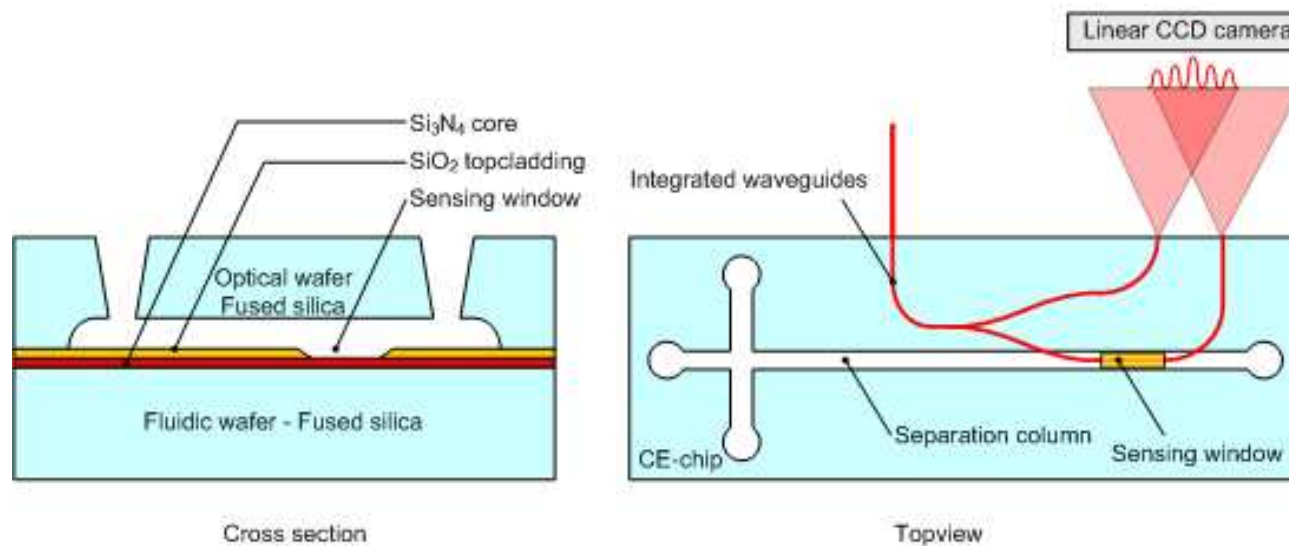
# BC6 Optical Sensor



Hans vd Vlekkert

## Optical Sensor

- Optical Sensor integrated into microfluidics platform
- Optical sensor is based on Young interferometer or Mach-Zehnder interferometer principle
- The Fluidic layer uses Capillary Electrophoresis to separate different contents of the fluid.
- The combination of optical and microfluidic sensor is favourable since very sensitive devices can be created



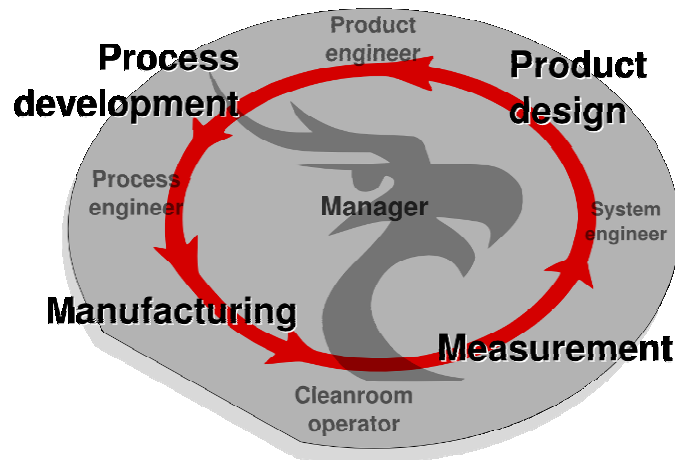
## Applications Optical sensor

- These devices can be used as sensing elements for
  - environmental monitoring,
  - security (homeland defence)
  - analytical instruments for industrial process control
  - etc.



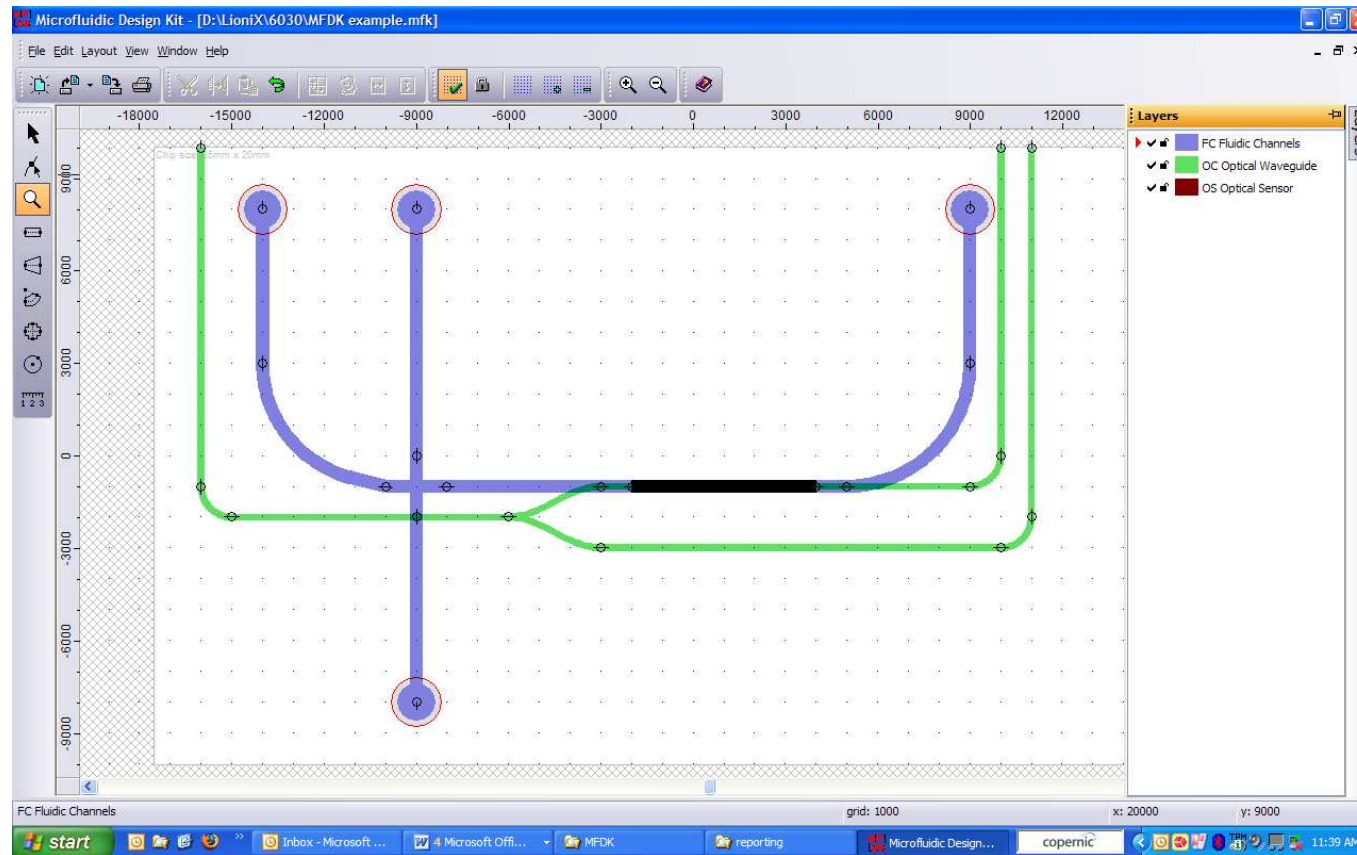
## WP2 microfluidics design kit

- A “symbolic” design environment.
  - The software tool will translate the “symbolic” design into the actual chip lay-out (mask) and process flow.
  - Taking into account the design rules of the manufacturing environment (user selectable technology).
  - Part of Manufacturing Execution System (Phoenix & Limis)



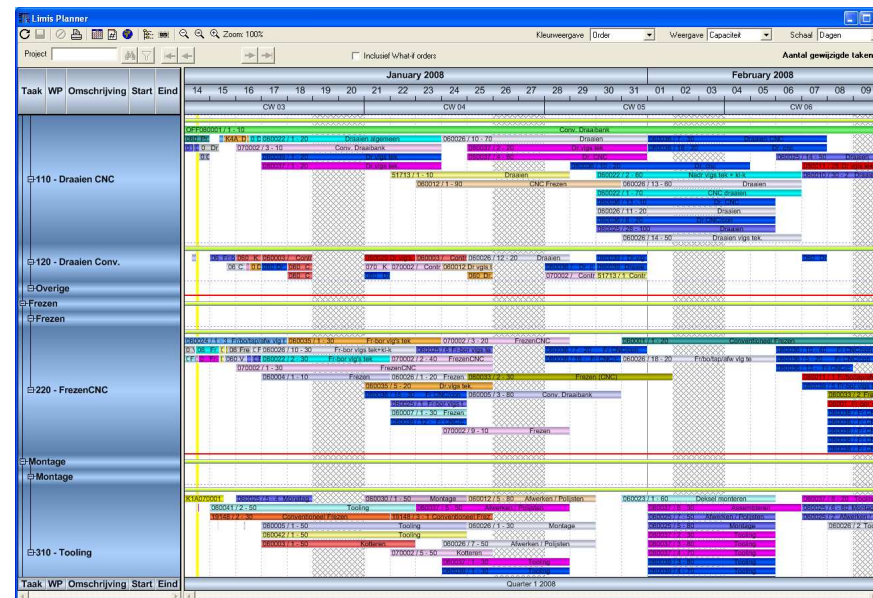
## WP2 microfluidics design kit

- UT-TST



# WP2 MES

- First set-up of demonstrator system including communicating software (PhoeniX-LIMIS) realised
- Planboard design



## WP3

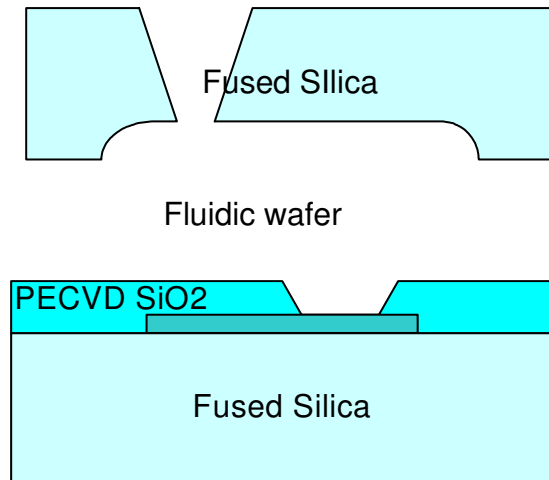
Deposition of high quality optical layer on fused silica

- Patterning waveguide structures
- Deposition of top cladding and interaction windows

- Bonding:

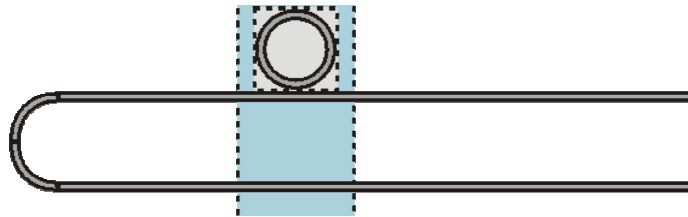
- The yield of the direct bonding process of fused silica wafers is further improved by controlling surface roughness

- Other detection principles by partners (UT-IOMS, UT-Bios)

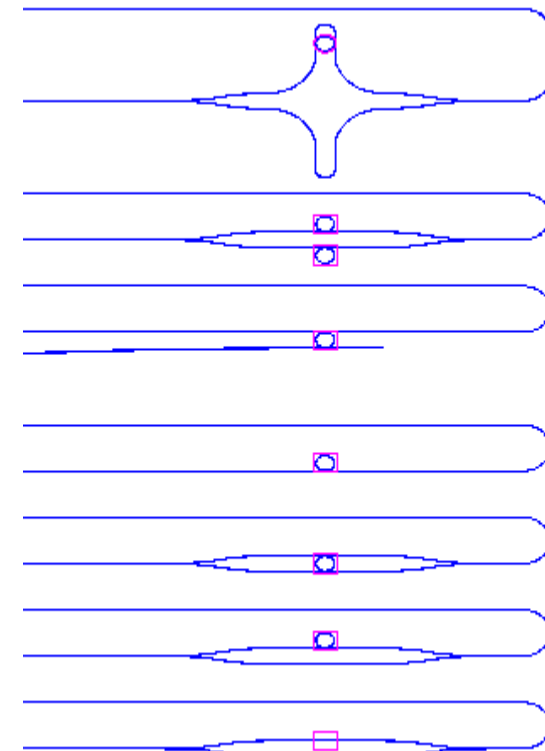


## WP3

- Other detection principle by LioniX
- Enhancements of intensity of light in sensing window: microring resonator



- Mask design ready



## WP3

Input van Hugo

## Exploitation and valorization

- CapiliX B.V.
  - Microchip Capillary Electrophoresis
  - Analytical equipment
  - Biotechnology, pharmaceuticals and water quality management.
  - Located in Leeuwarden, part of the waterhub

