Support d'informations

Projet Exogene: GALECHIP

Concept of Galenic Lab-on-chip

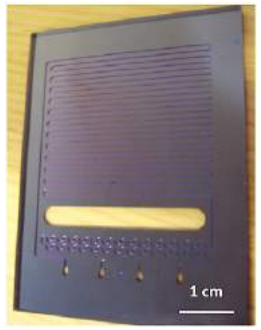
Labopuce galénique

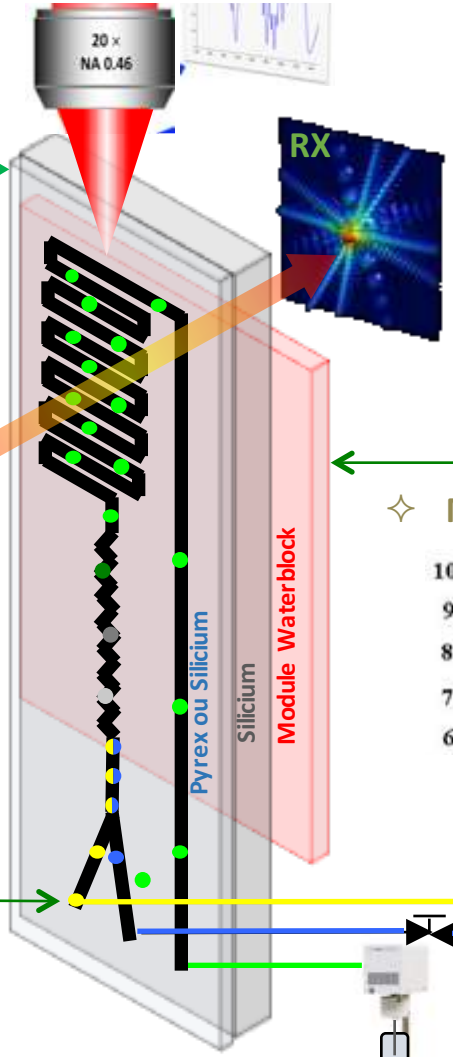
- ✧ Puce (Silicium) gravée de microcanaux
- ✧ Capot (Pyrex ou Silicium) fixé par scellement anodique

⇒ ***Labopuces Si/Si etSi/Pyrex***

- ✧ Puce (PEEK) imprimée
- ✧ Capot (Verre ou Silicium) scéllé par thermocompression

⇒ ***Labopuces PEEK/Si et PEEK/Verre***



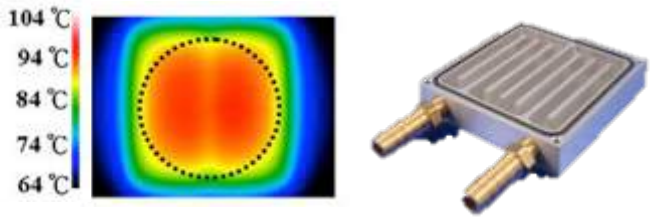


Outils de caractérisation *in-situ*

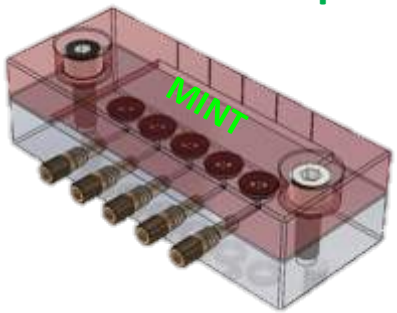
- ✧ Analyse *in-situ* Rayons X (ESRF) et Raman (IMMM CNRS U6283)
- ✧ Visualisation par caméra rapide (MINT)

Dispositif de thermalisation

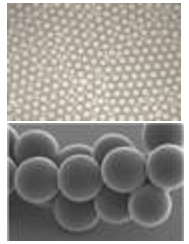
- ✧ Module « Waterblock »



Connecteur microfluidique



SDM

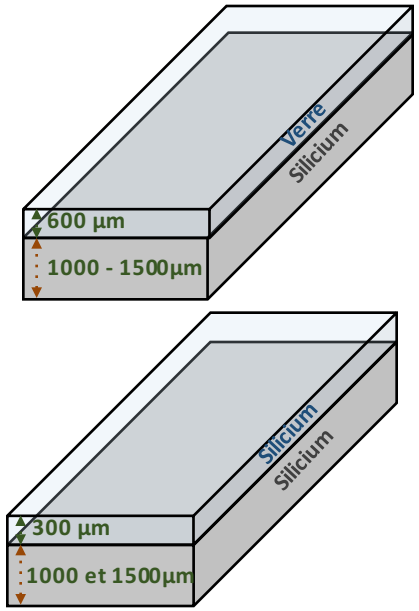


Pompes seringues et régulateur de pression

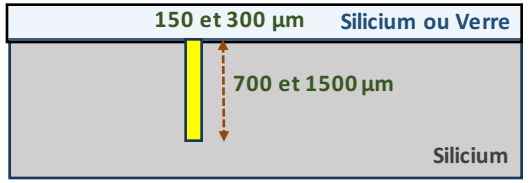
Projet Exogene: GALECHIP

Microfabrication de puces Si/Si et Si/Verre

Vue globale

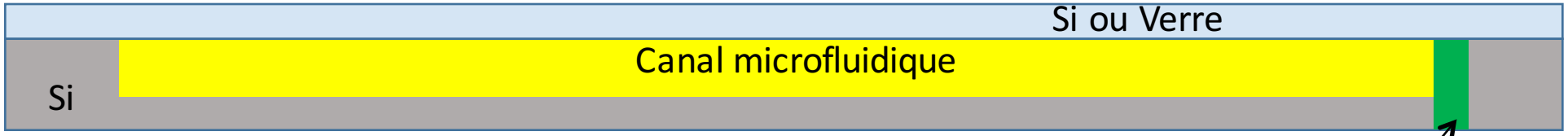


Vues en coupe



Dimensions de canal envisagées:

- 150 x 700
- 300 x 700
- 150 x 1500
- 300 x 1500



⇒ Design de masque à définir pour CAO

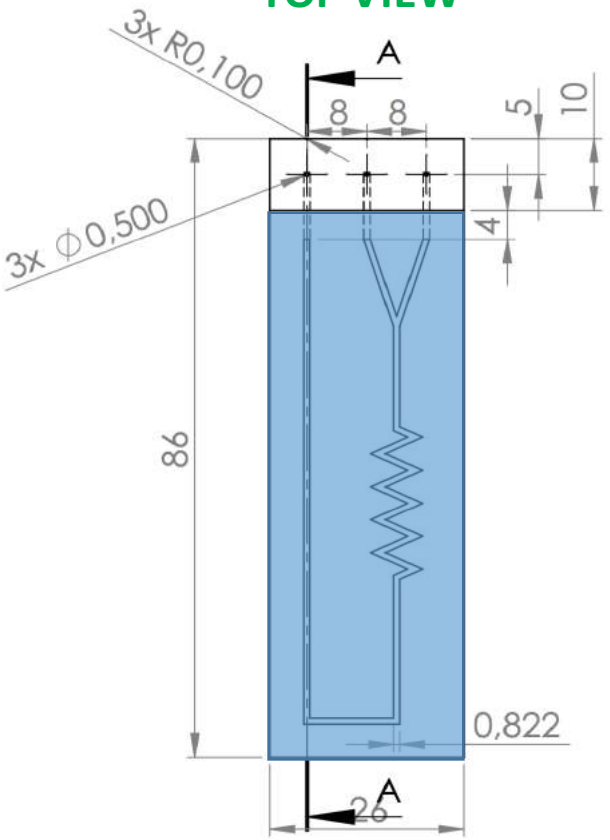
Trous (500 **µm)**

Projet Exogene: GALECHIP

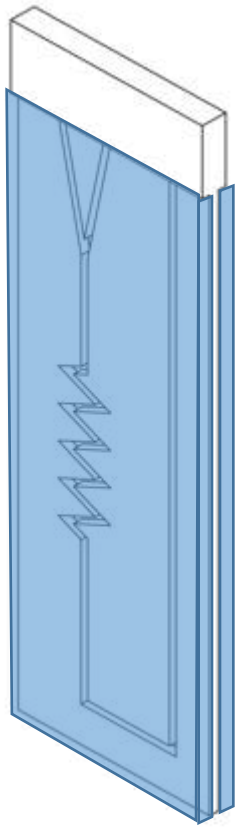
Thermocompression bonding of Glass – PEEK – Glass or Si – PEEK – Si bonding (structure level)

CROSS-SECTIONAL VIEW

TOP VIEW



Perspective view



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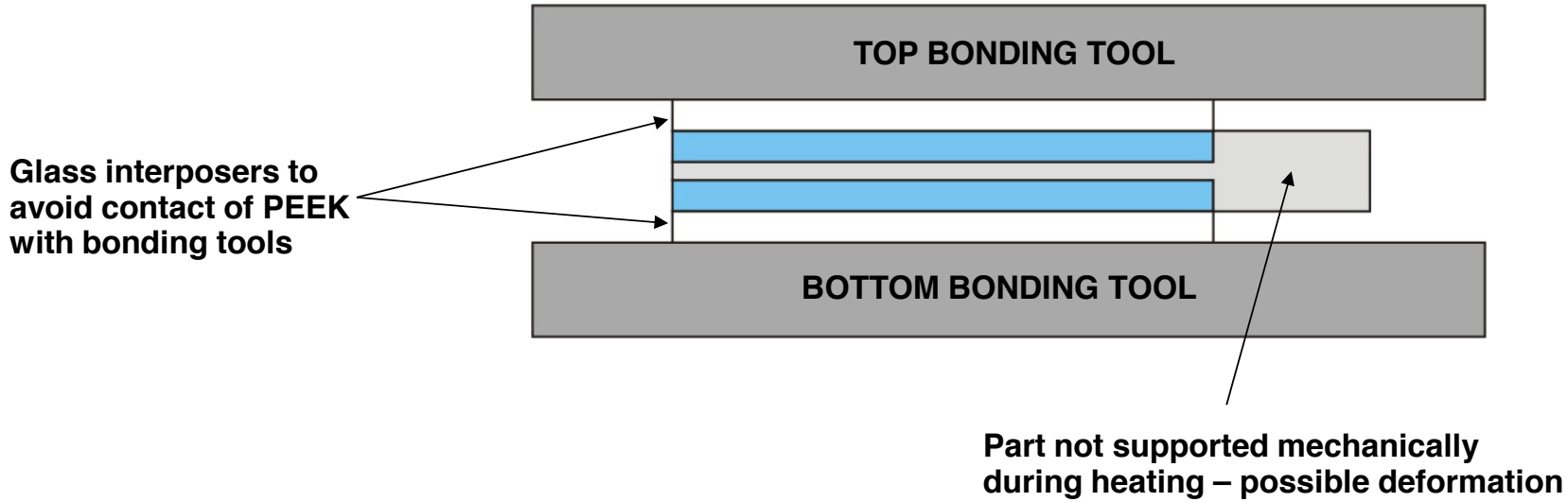
Surface pre-treatment protocoles of PEEK:
https://smichal.web.cern.ch/smichal/ETUDE_TRAITEMENT_SURFACE_COLLAGE_PEEK.pdf

Thermocompression process



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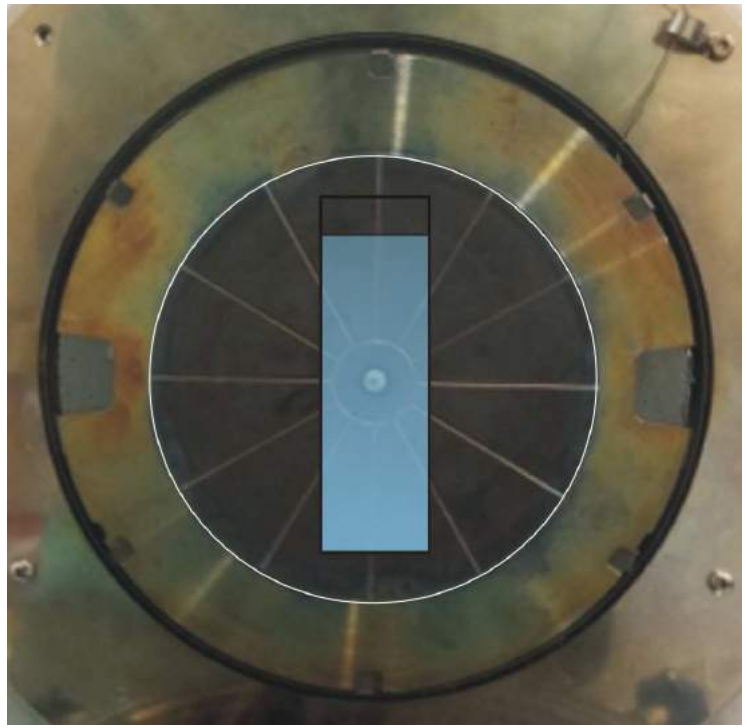

Problem: surface of PEEK (connections side) and surface of Glass are on the same level

Thickness of PEEK (connections): 3.2mm

Total thickness of Glass-PEEK-Glass: 3.2mm

They will have both contact with the bonding tools, resulting in undesired sticking of PEEK to hot bonding tool.

Solution 1: Use anti-sticking support wafer on both top and bottom sides (Si covered with Teflon-like polimer, alumina (worse thermal transfer)

Solution 2: Add additional Glass cover plates on both sides of the microreactor

- **Microstructure should be placed in the centre of the bonding tool in order to avoid non-uniform force distribution (drawing in scale)**
- **Only Glass (or Si) surface should be in contact with the bonding tools**
- **Components will be aligned and brougth into contact on the chuck since the flags can not be used**