

Arrays on a shoestring

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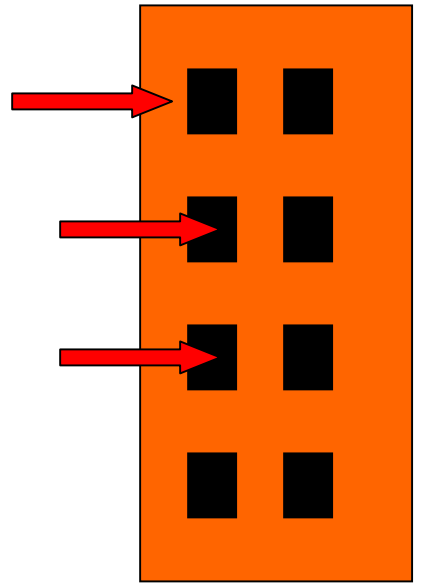
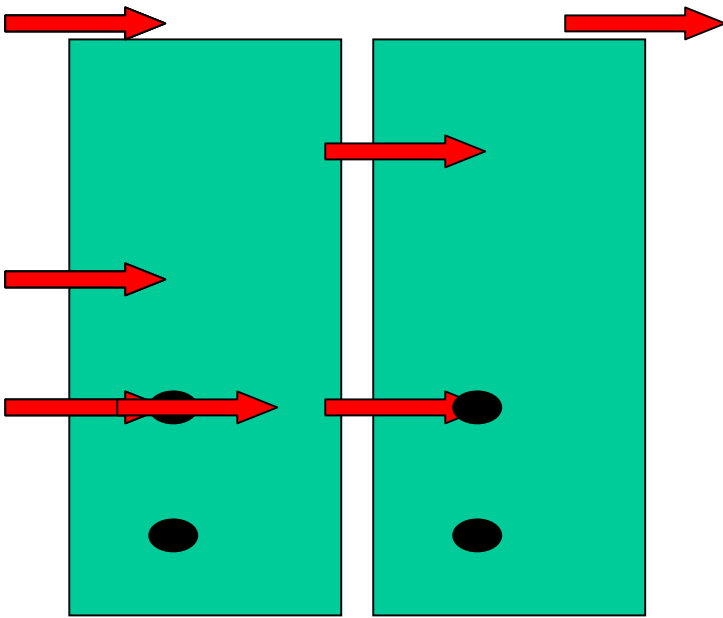
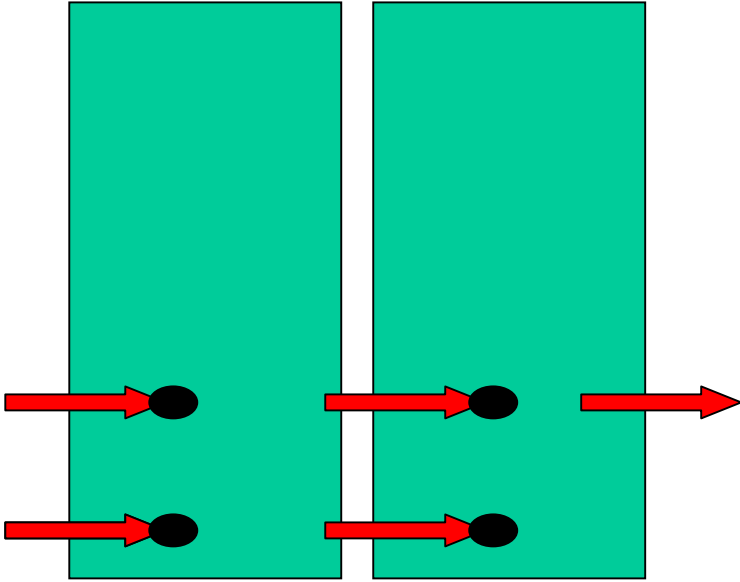
Why microarrays are expensive?

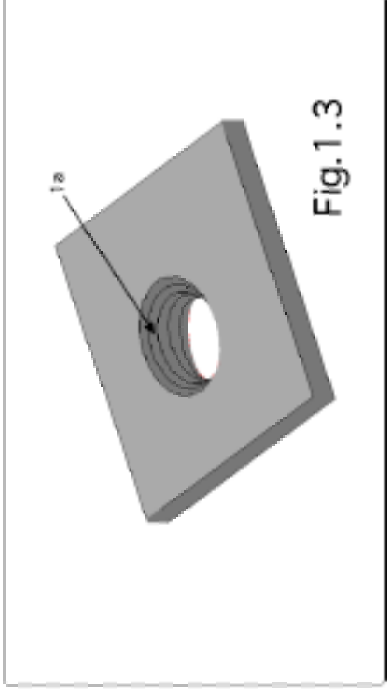
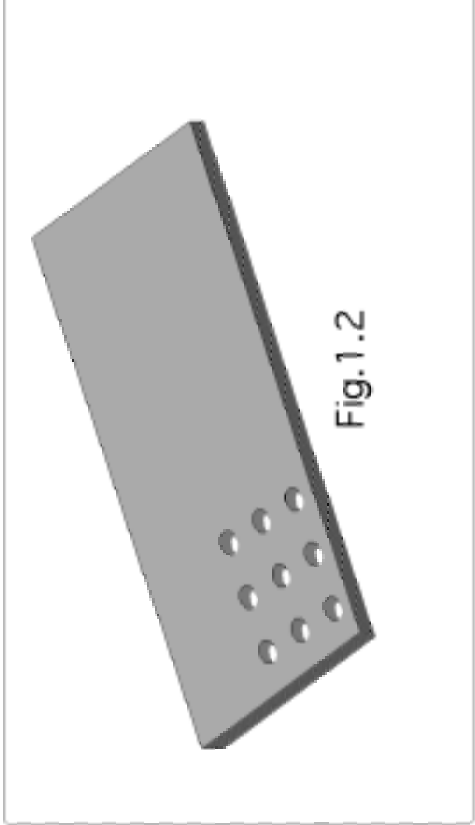
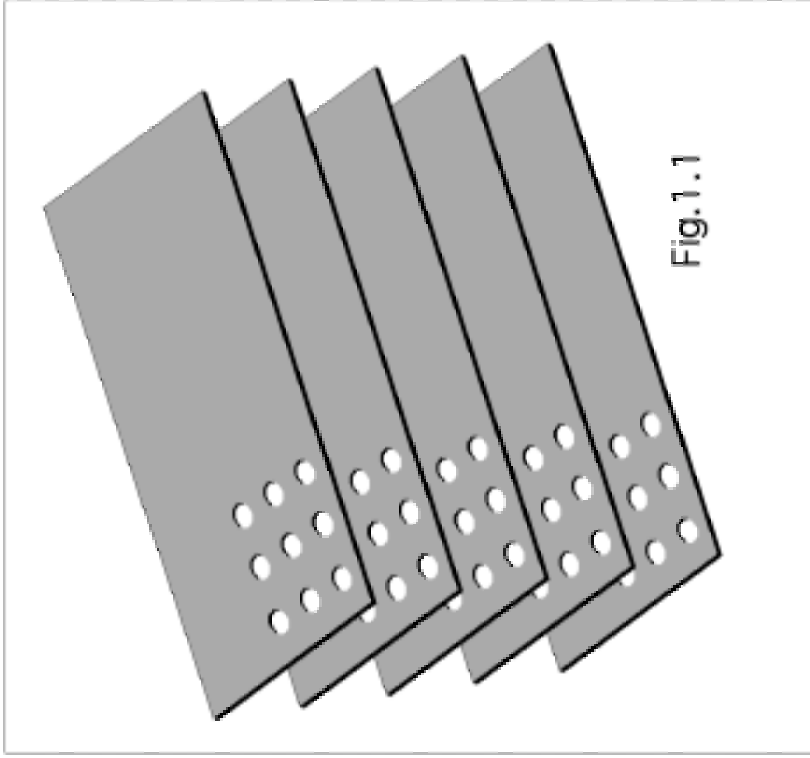
- Probe development
- Array preparation
- Array reading

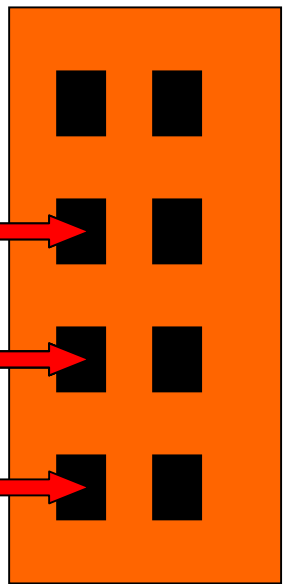
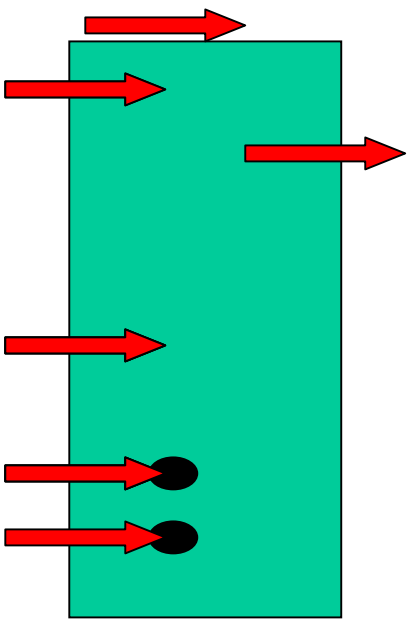
- Probe development, production, testing and validation are expensive processes
- The cost is proportional to the number of probes

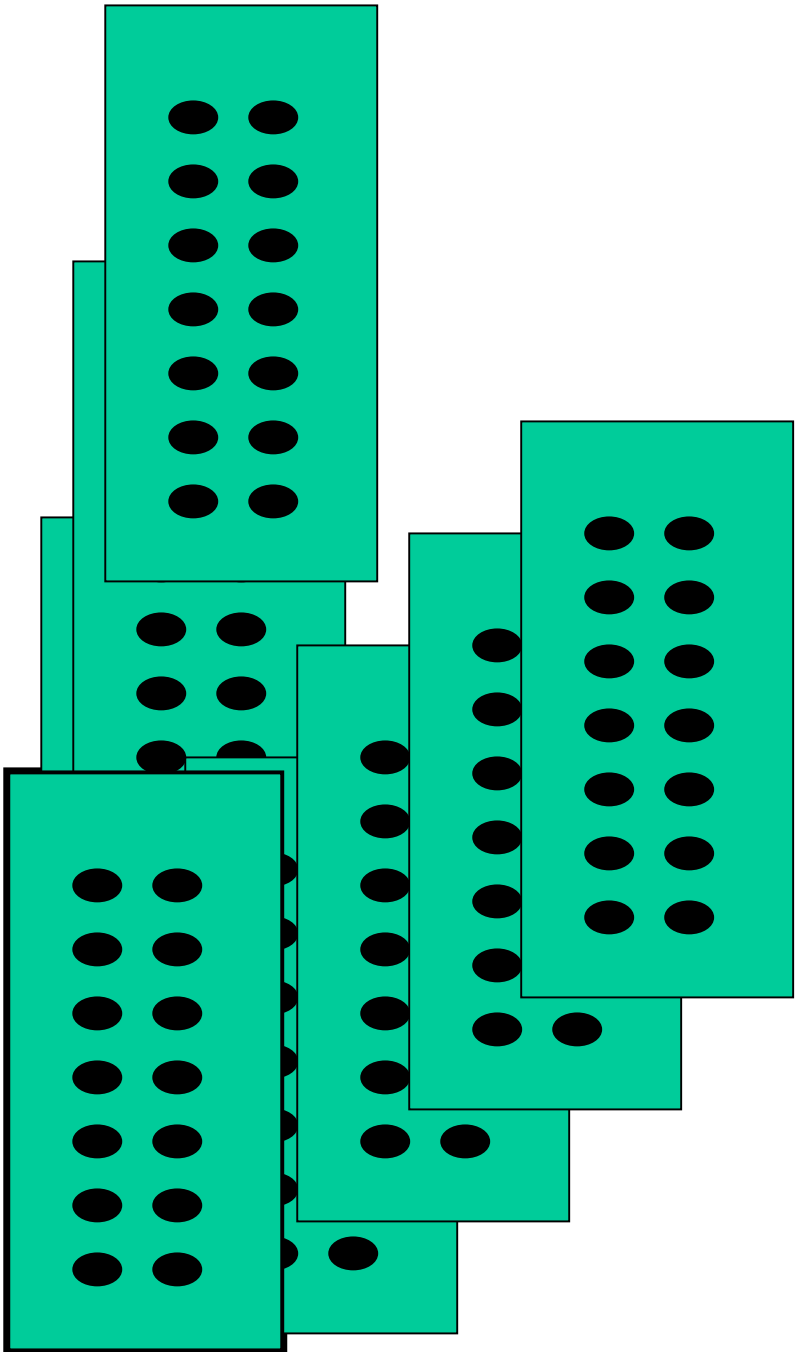
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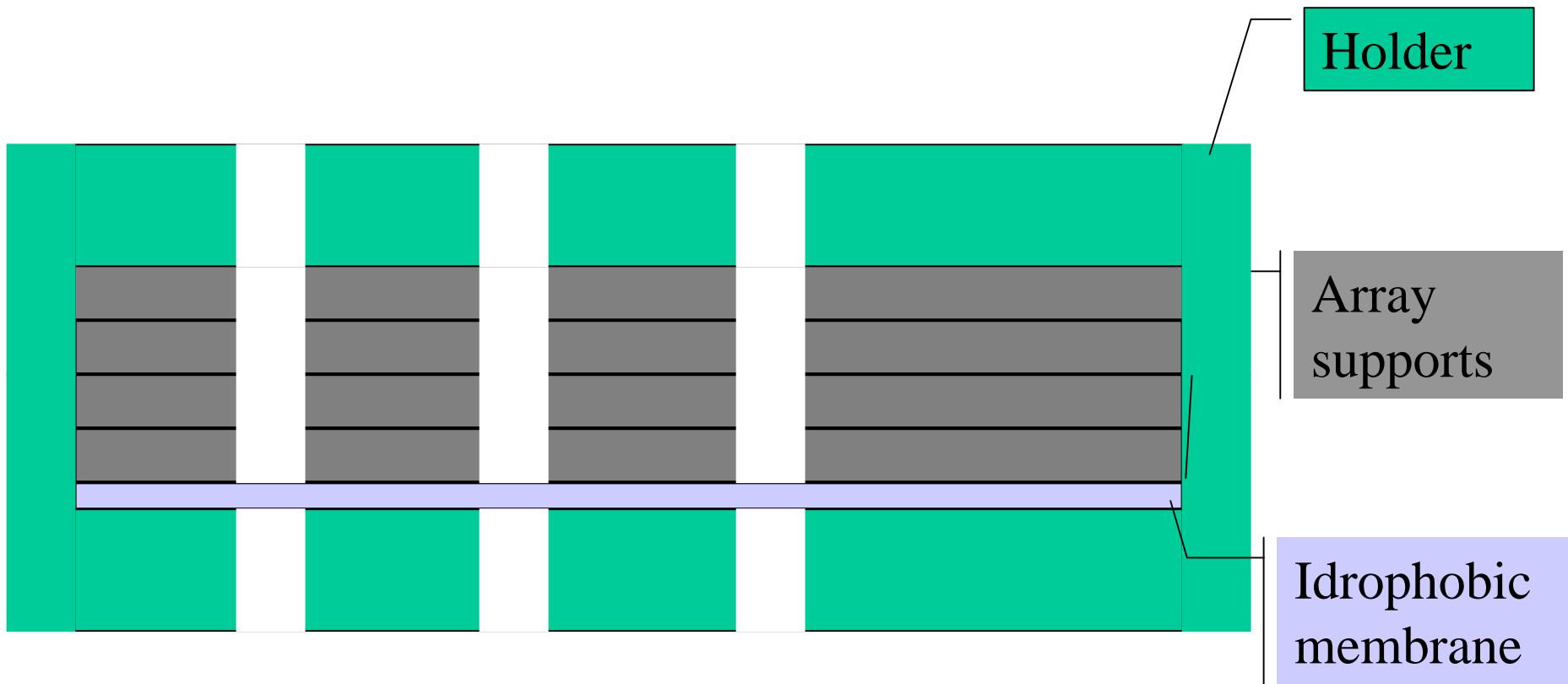
- Probe development
- **Array preparation**
- Array reading



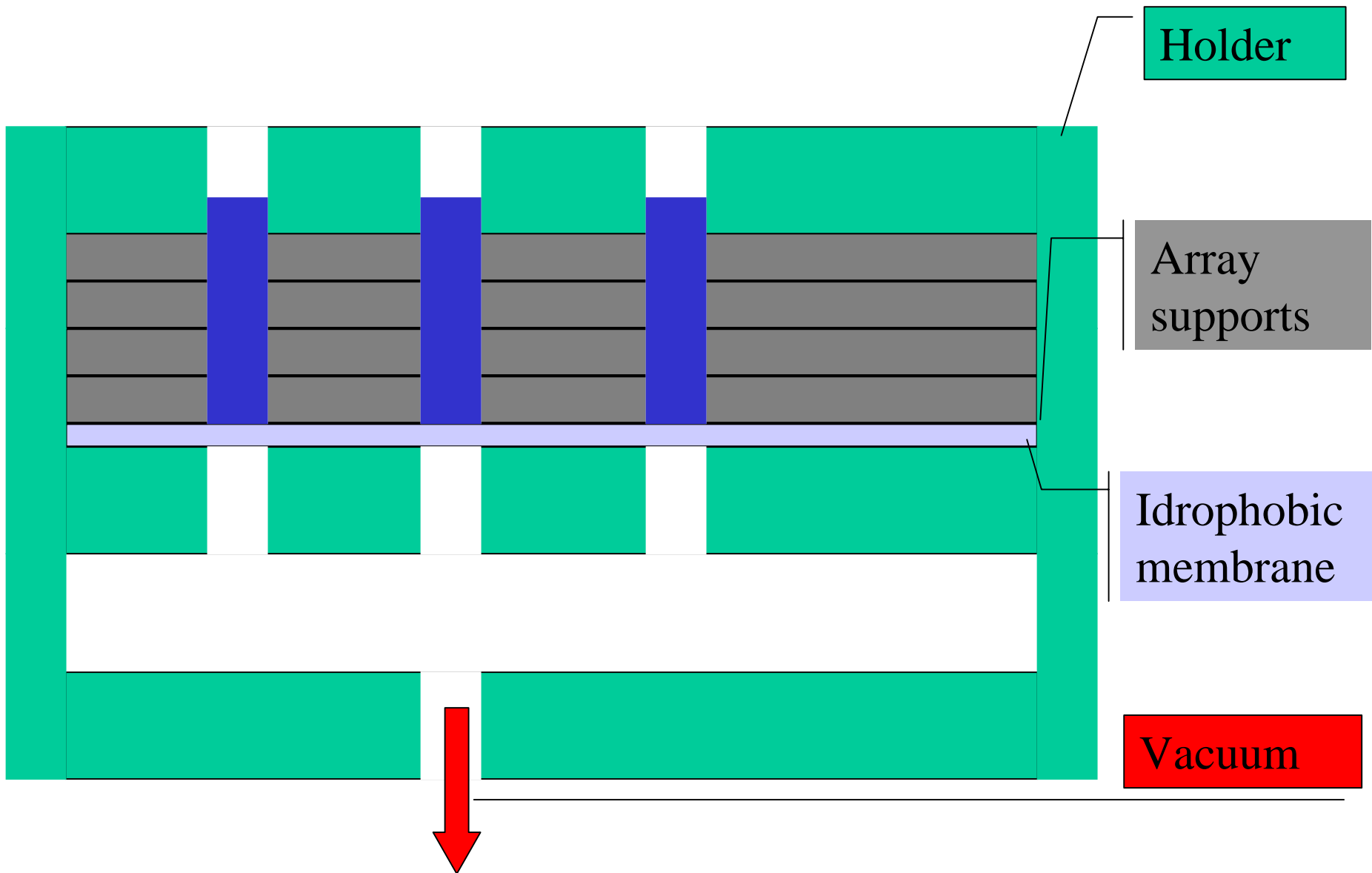




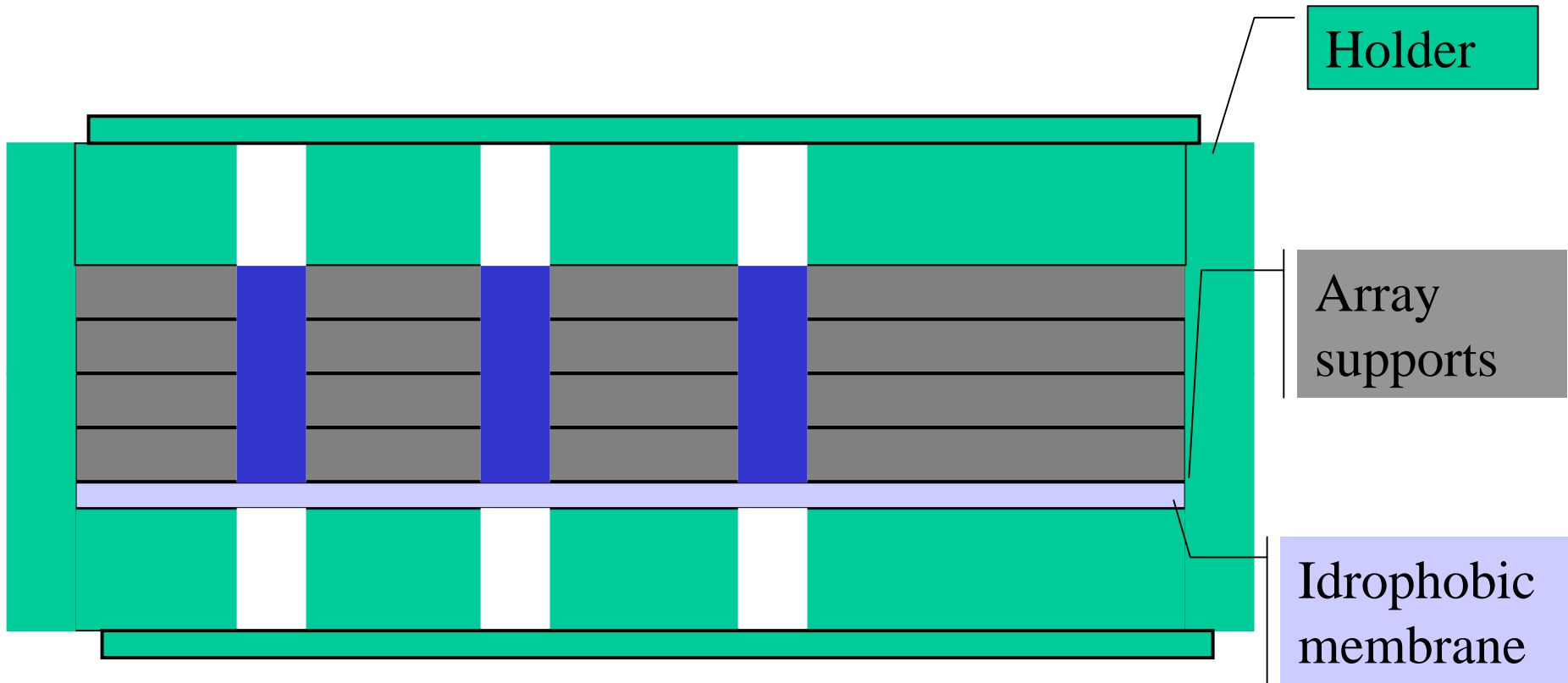




Apply vacuum and load samples

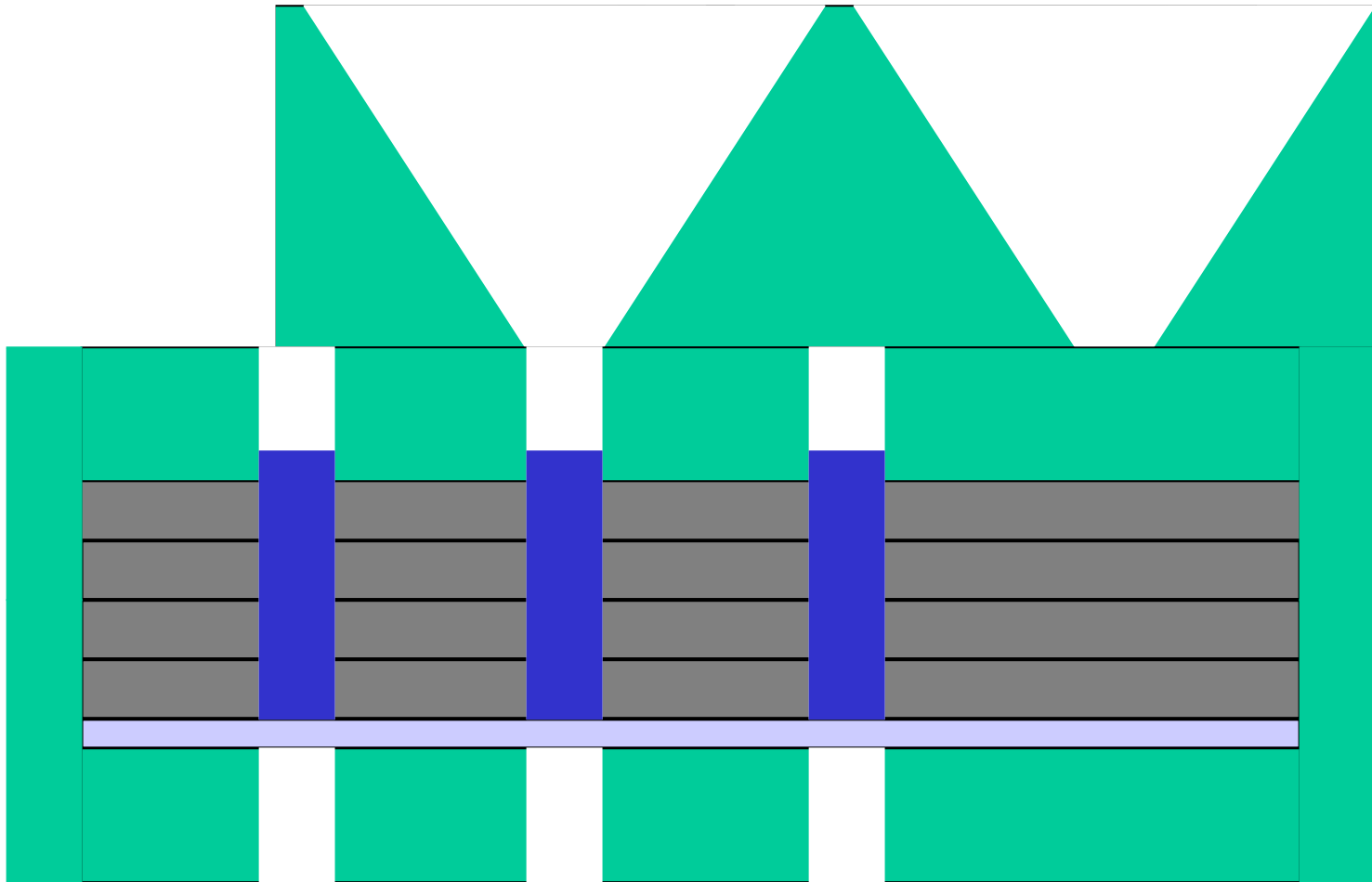


Seal and incubate/attach polymers to the support holes surface

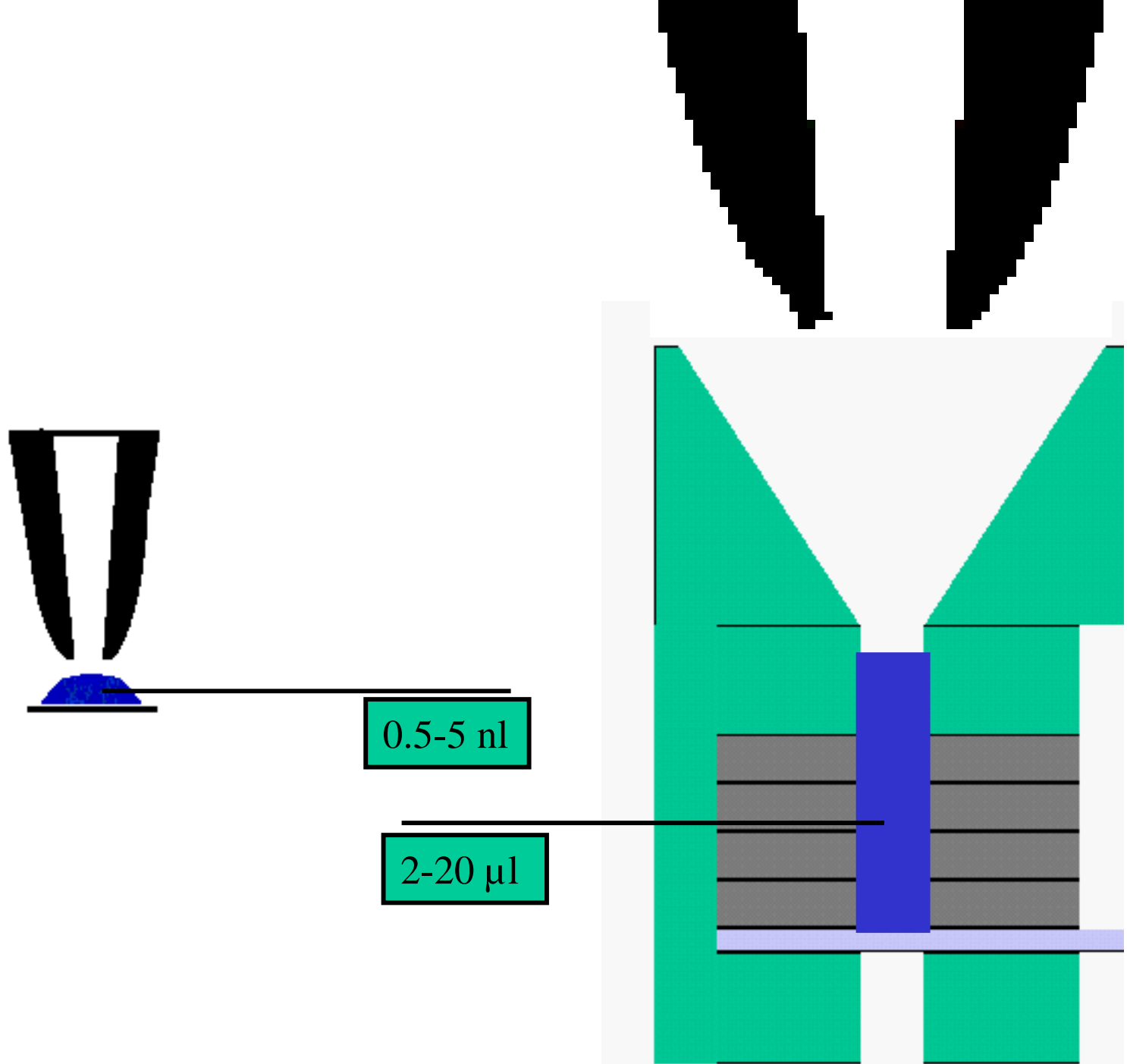


Dry and disassemble



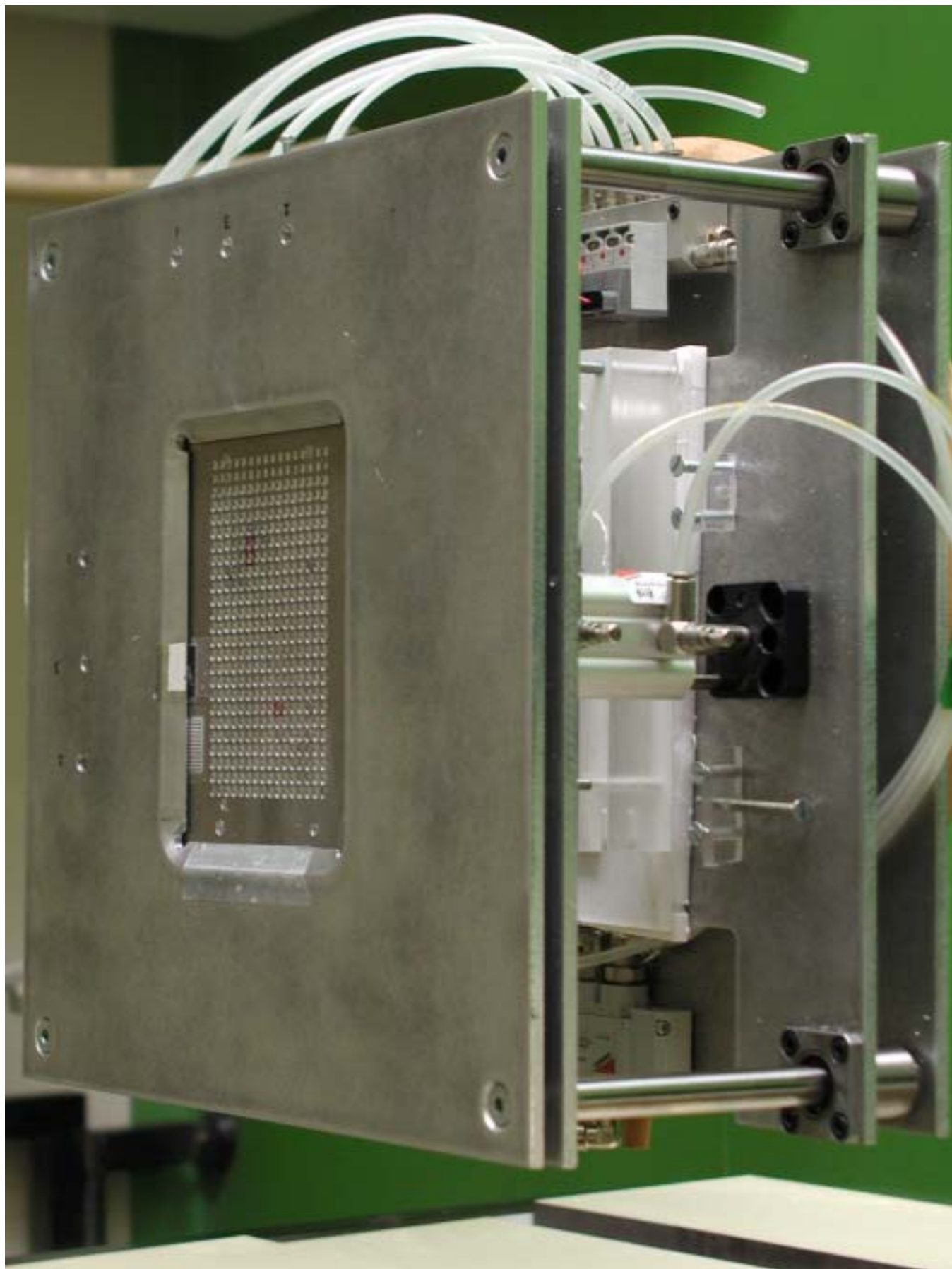


Driving large sample volumes in medium-density grids (400-2000 μm between spot centers)



Advantages of parallel arrays

- Reduced number of dispensing actions
 - Increased speed
 - Hand loading for small spot numbers (probe testing)
- Increased dispensed volume
 - Reduced dust and evaporation problems
 - Simpler device
 - Increased spot to spot reproducibility
- loading and attachment surfaces on a different plane
 - High positioning precision not required
- Single load for all arrays
 - Increased array to array reproducibility



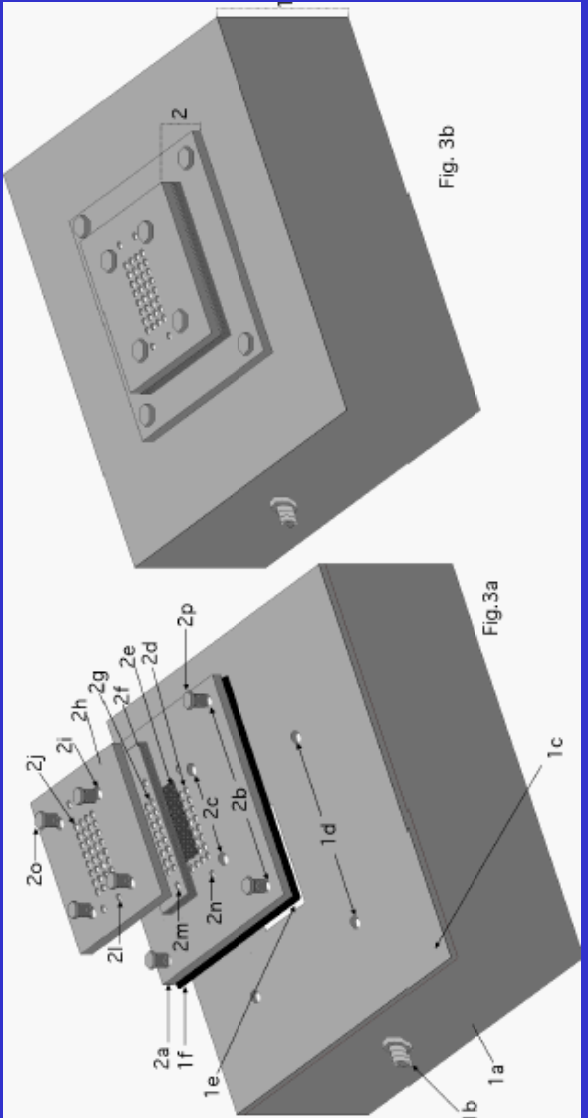
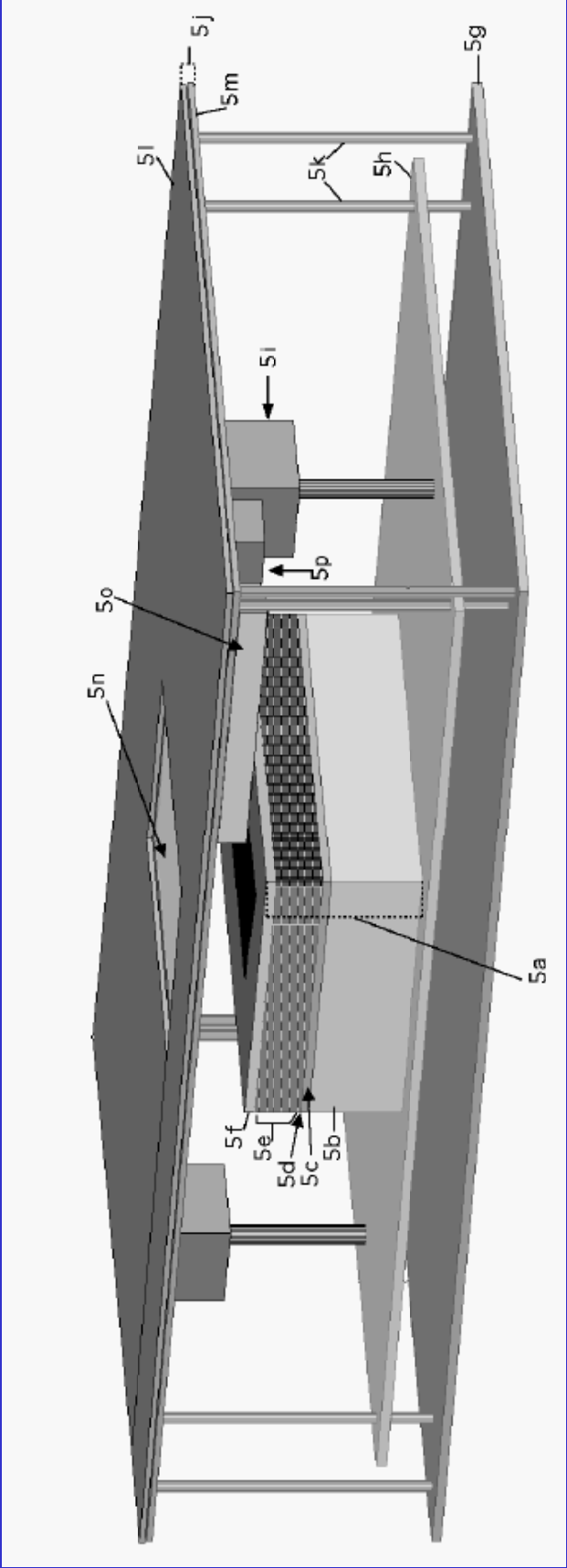
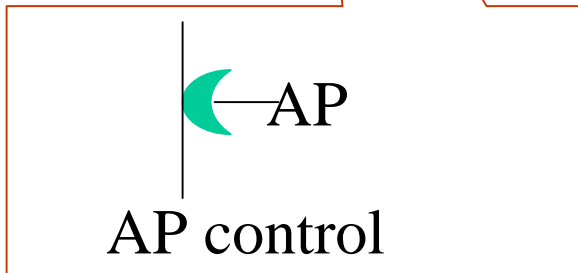
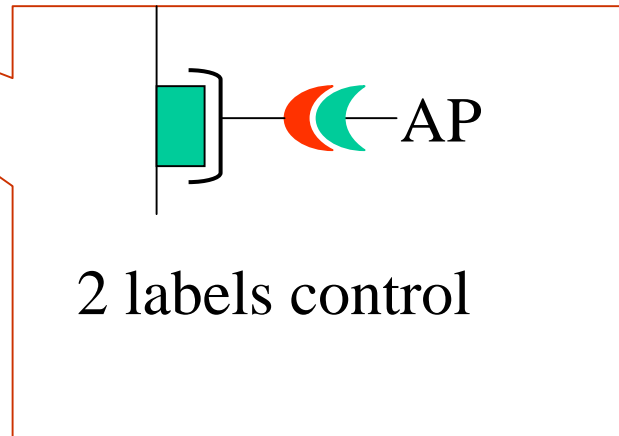
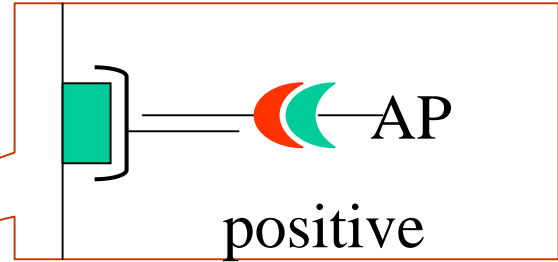
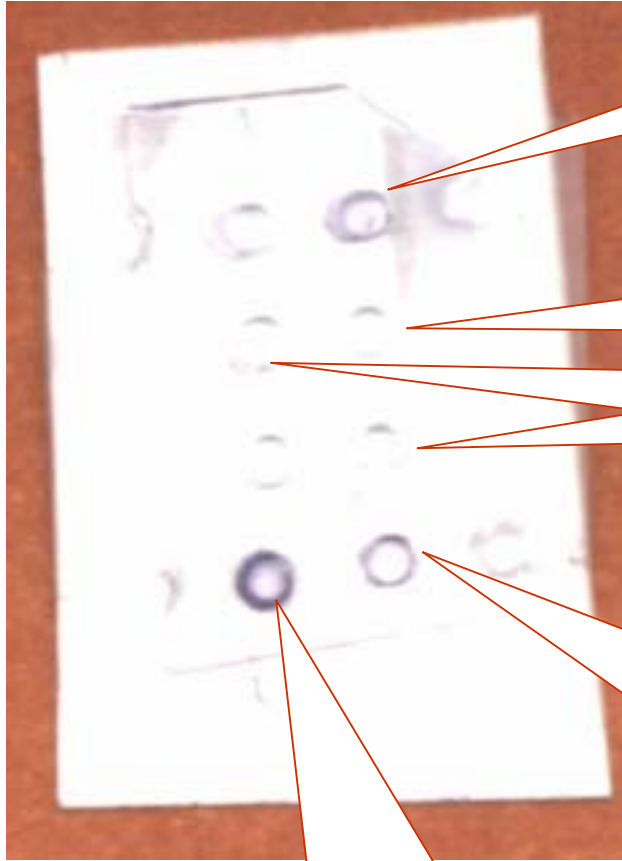


Fig. 3b

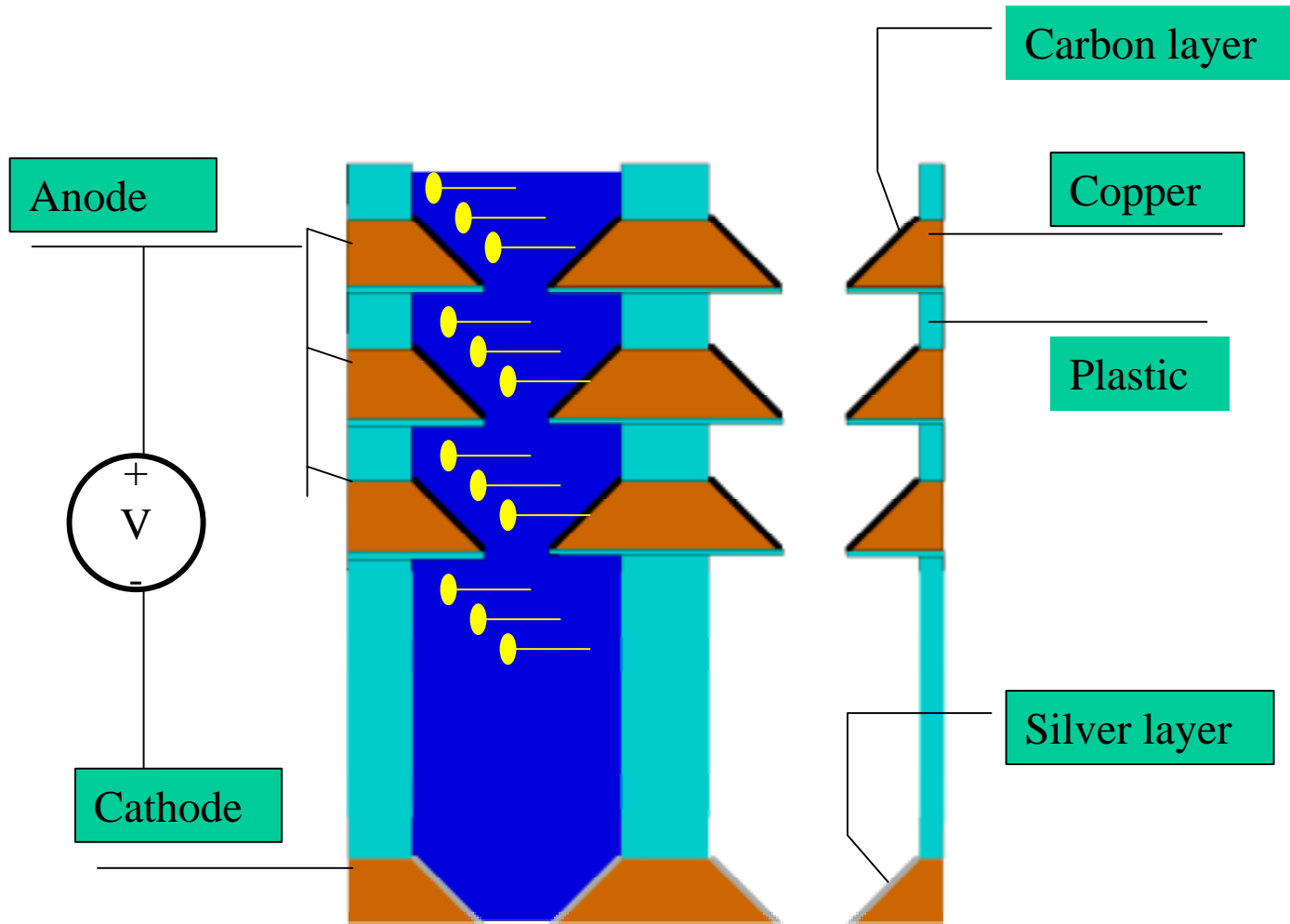
Fig.3a



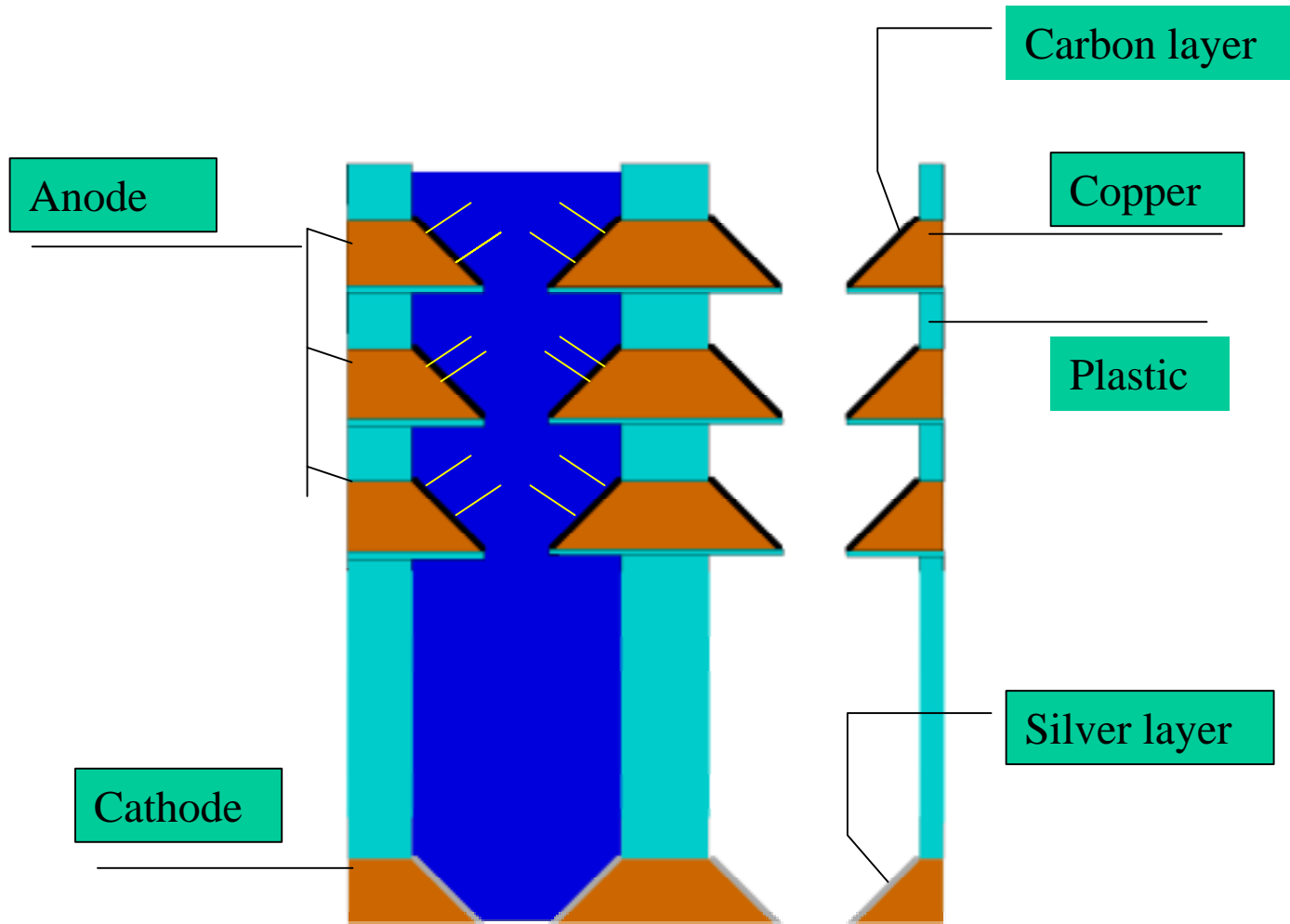
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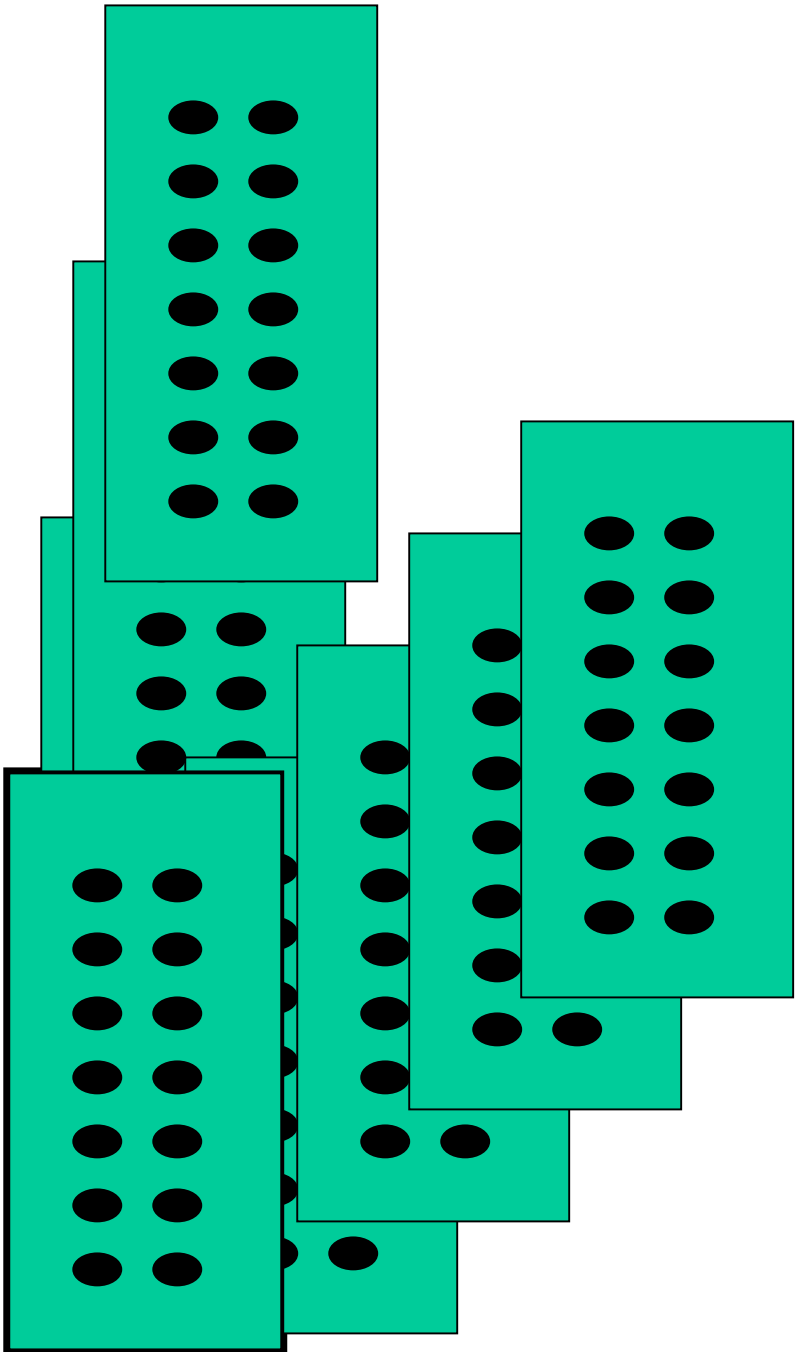
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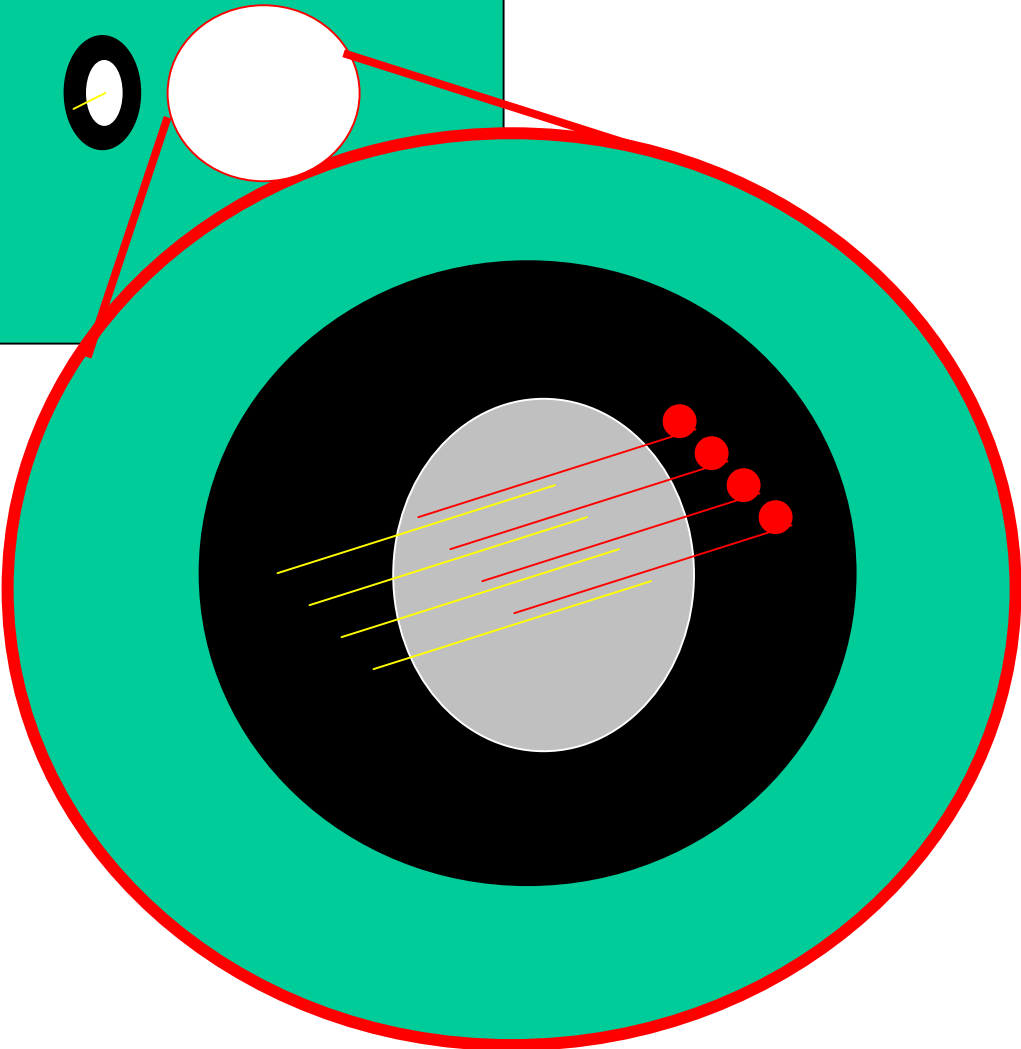
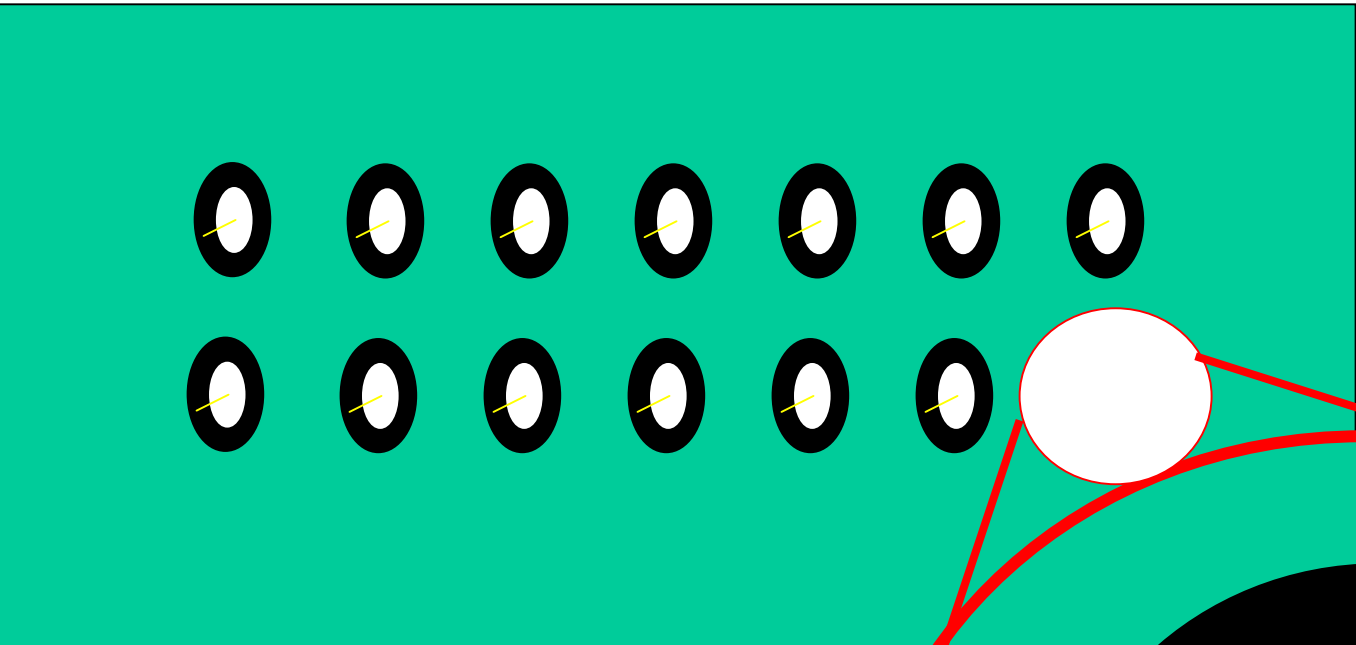
Section of the parallel electroarray sandwich



Section of the parallel electroarray sandwich



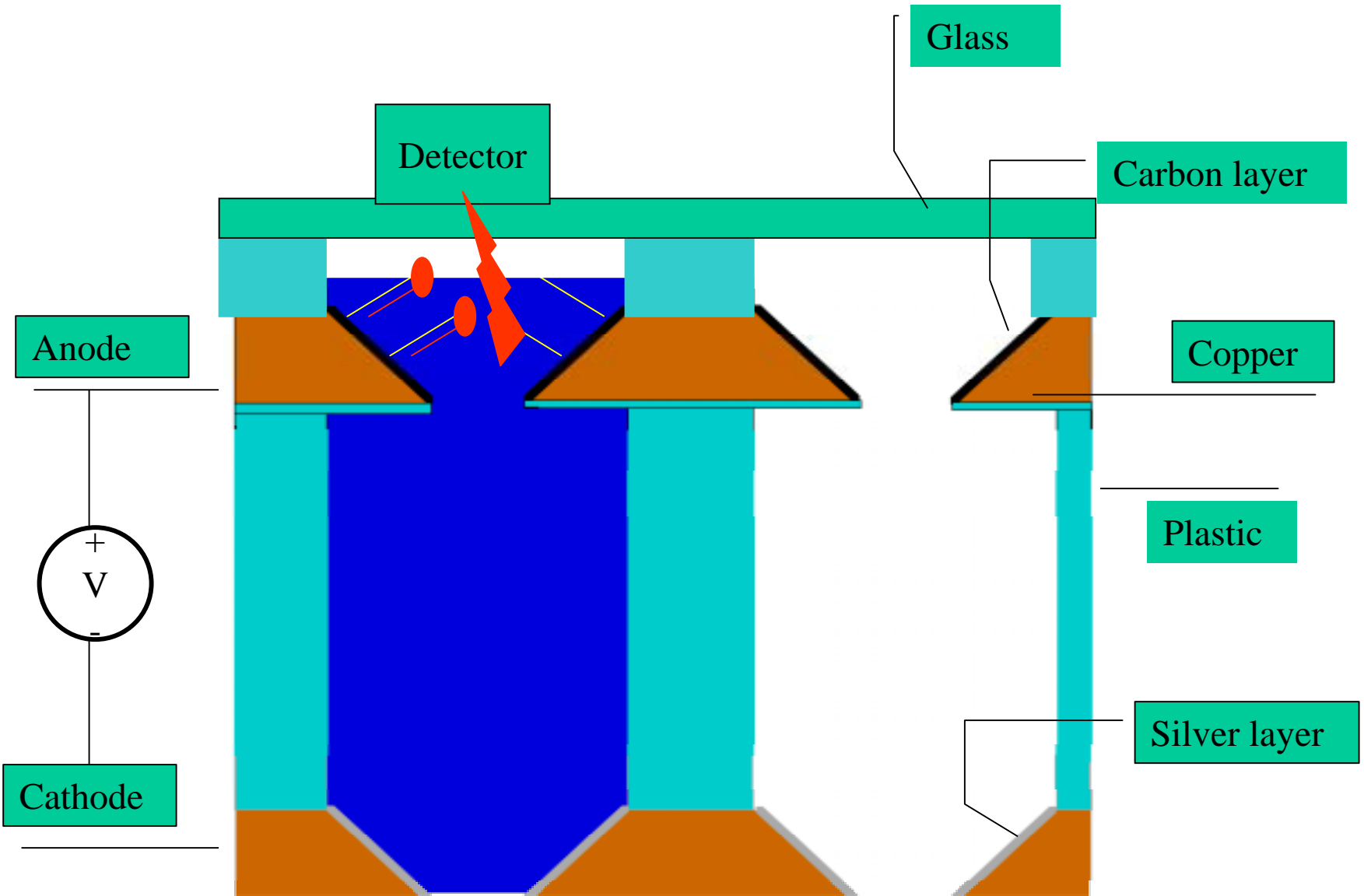




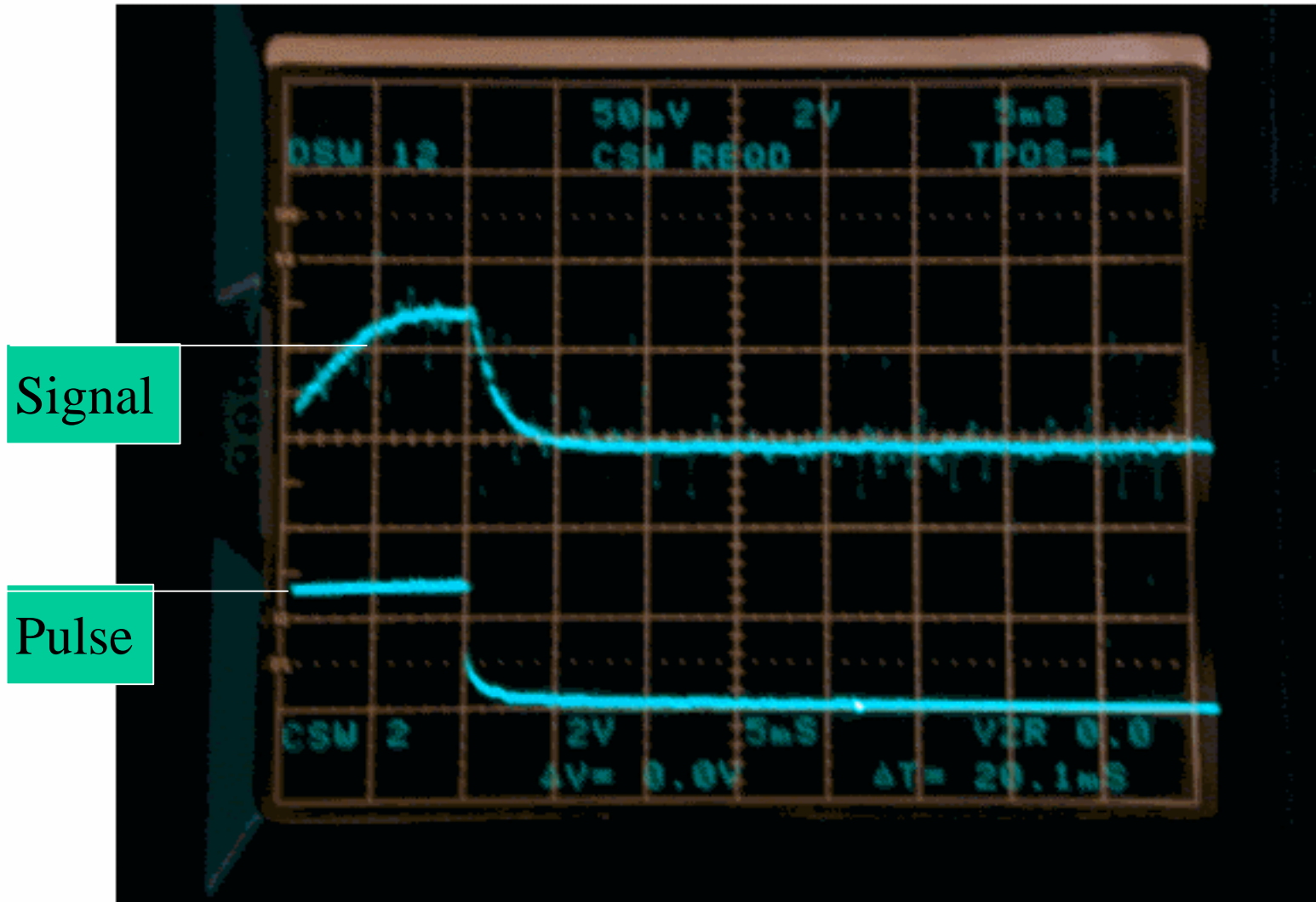
Hybridization to Ru(bpy)
labelled probe



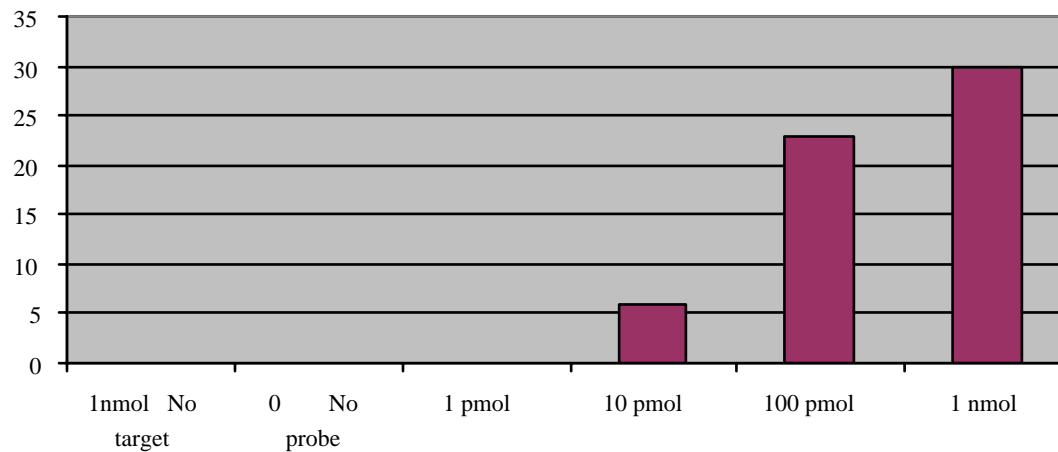
Detection



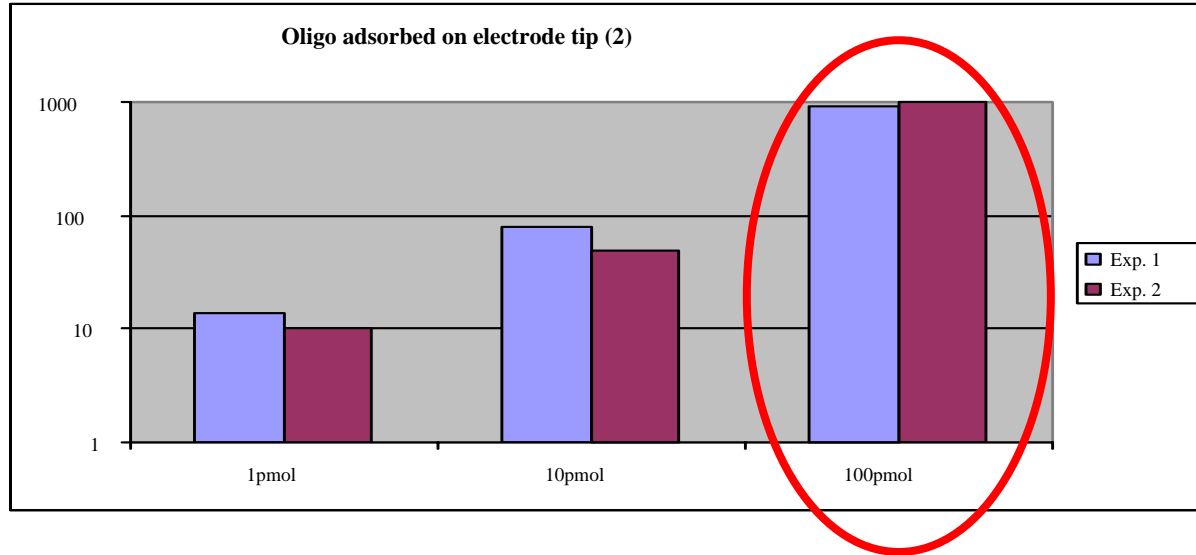
Signal detection with a 10 msec pulse



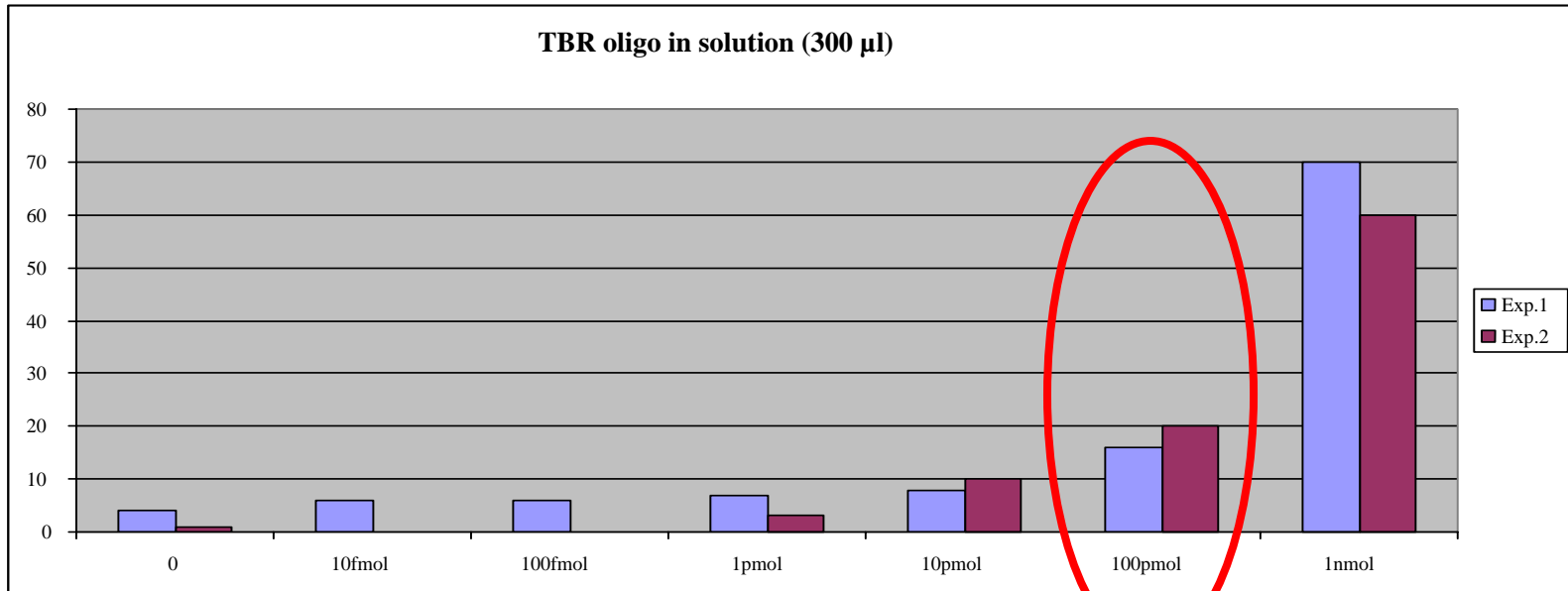
**Hybridization of TBR oligo to to unlabelled oligo
attached on electrode surface**



Real time detection: no need to remove the unbound probe

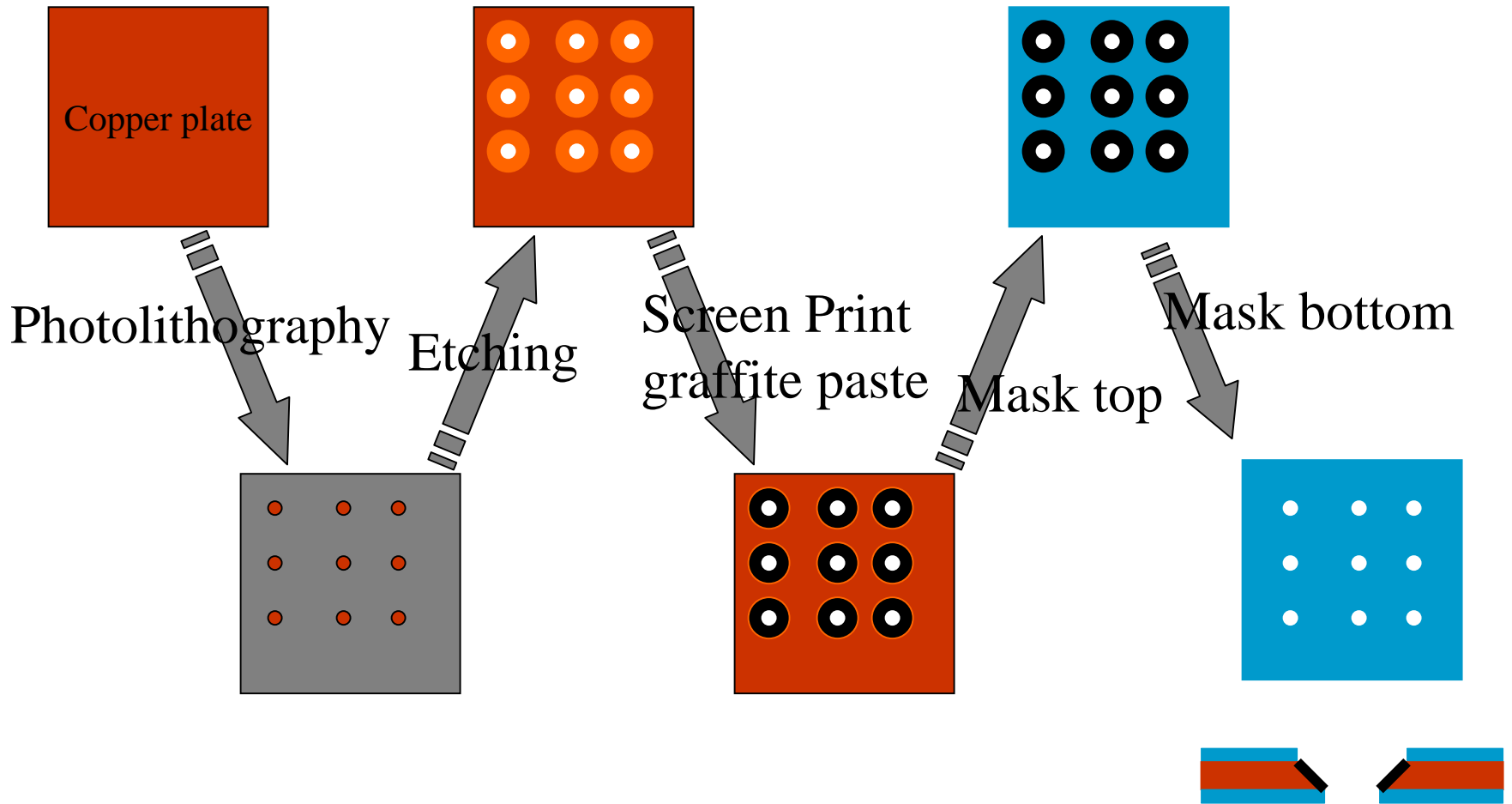


The label which does not contact the electrode does not emit light.



PCB (Printed Circuit Board) technology

[smaller feature: 50-100 μm]



Advantages of electric arrays

- Easy attachment (load & switch power on)
- Extremely easy detection
- Low cost equipment
- Low cost per assay
- Excellent signal to noise ratio, no ‘dust fluorescence’
- Real time detection?

