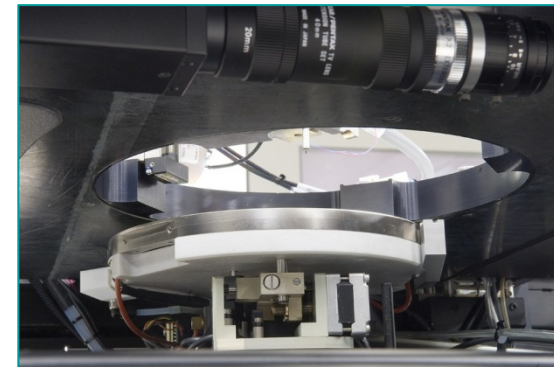
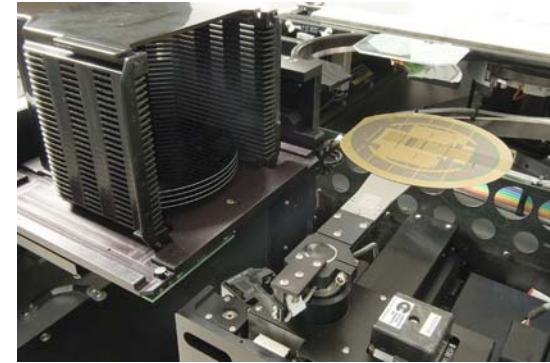




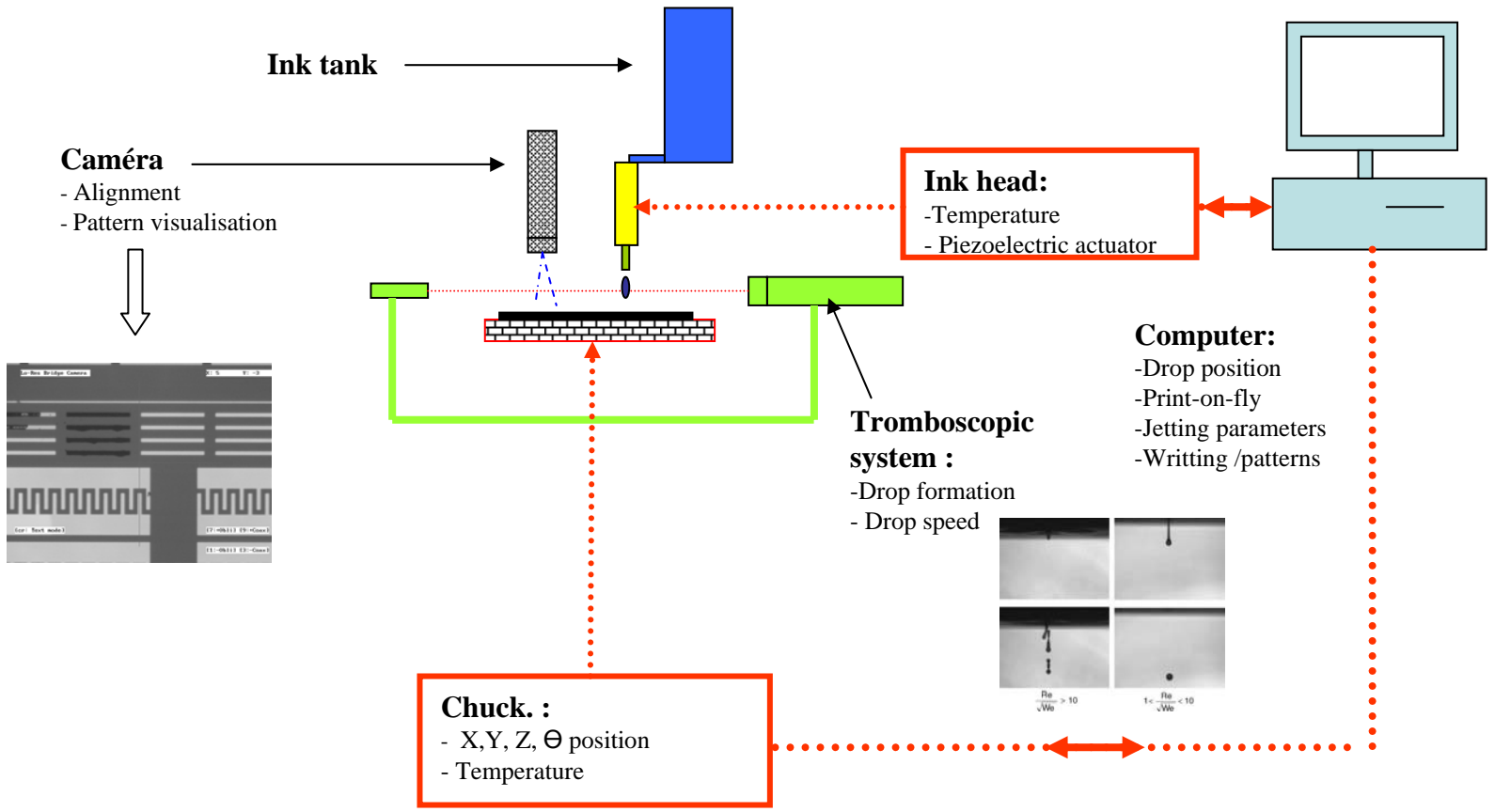
Fabrication of activated carbon electrodes by inkjet deposition

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Altatech Equipment



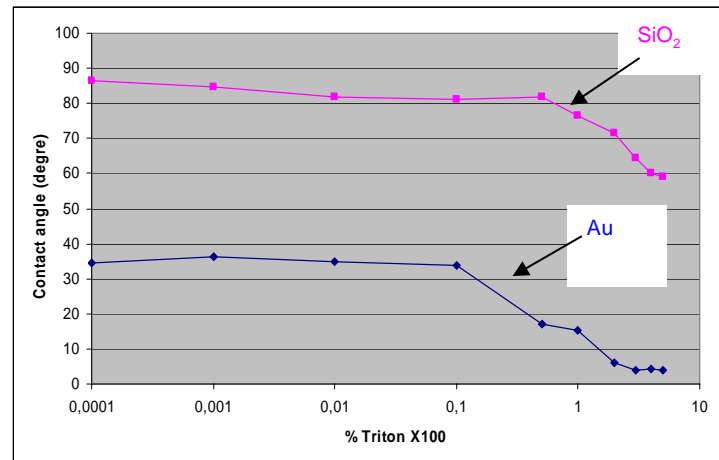
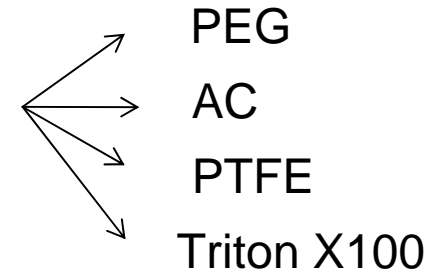
Altatech Drop-on-demand inkjet system



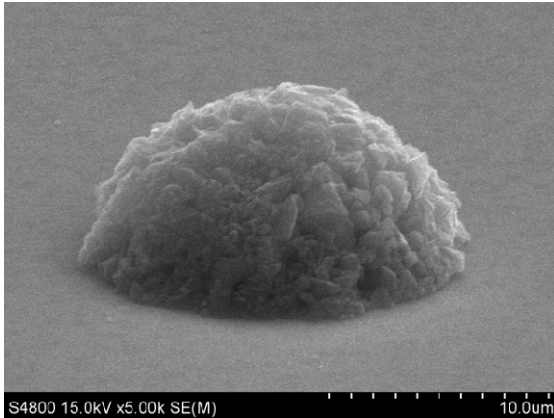
The success conditions for inkjet printing

- Ink:
 - Viscosity 0.5-20 Cp
 - Stability of the particules in suspension by controlling the composition

- Substrate:
 - OTS functionalisation by deep coating
 - Optimisation of the contact angle
 - Hydrophilic or hydrophobic surface



Deposition at room temperature onto hydrophobic and hydrophilic surface



AC deposition onto a high contact angle surface of SiO₂.

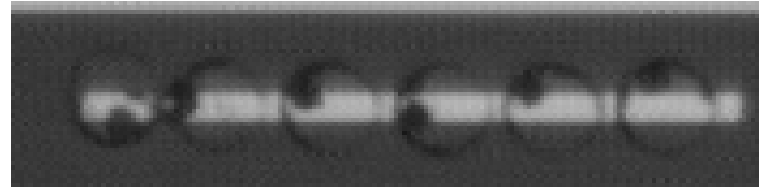
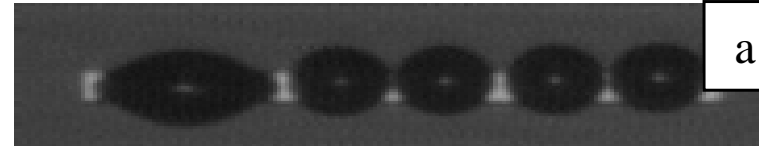
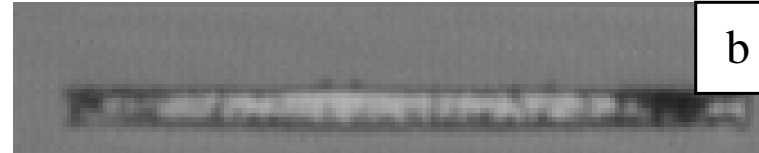


Image with 30° contact angles on Au and SiO₂.



a



b

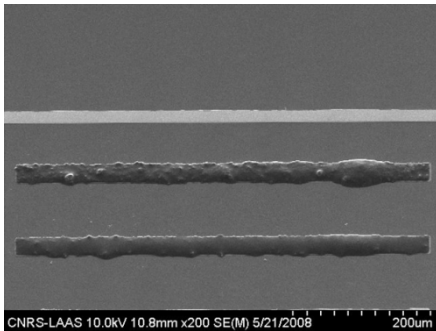
a) Droplets after inkjet printing at room temperature

b) Activated carbon dispersion after hot plate bake

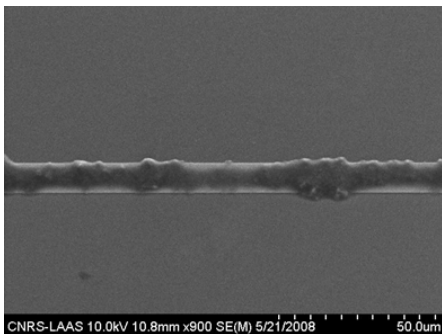
Contact angle: Au 30° and SiO₂ 60°

Deposition at 140°C:

linear lines

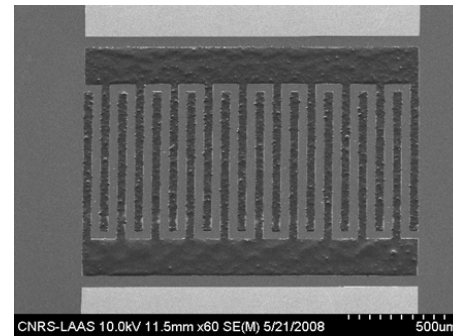


*SEM of 30 μ m wide electrodes.
Head: 50 μ m diameter*

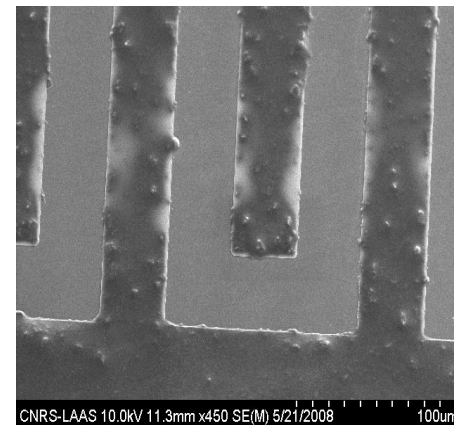


SEM of 10 μ m wide electrode.

interdigitated structure
40 μ m lines and spaces



general view



detail of the structure

Conclusion

- Method allows depositions smaller than the nozzle diameter resulting in a higher resolution .
- Possibility to write exactly on gold electrodes
- Capabilities to develop a nanoparticles deposition:
Ex; ZnO and Carbon nanotubes (CNT)