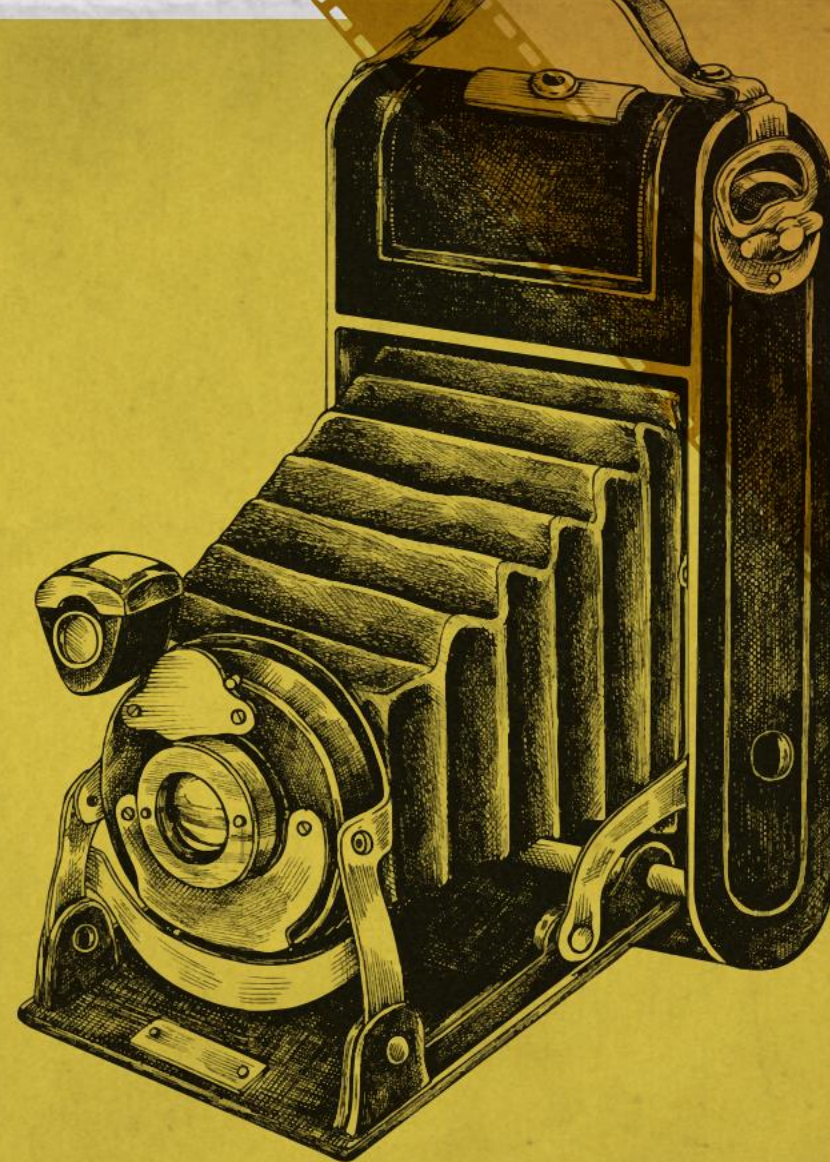
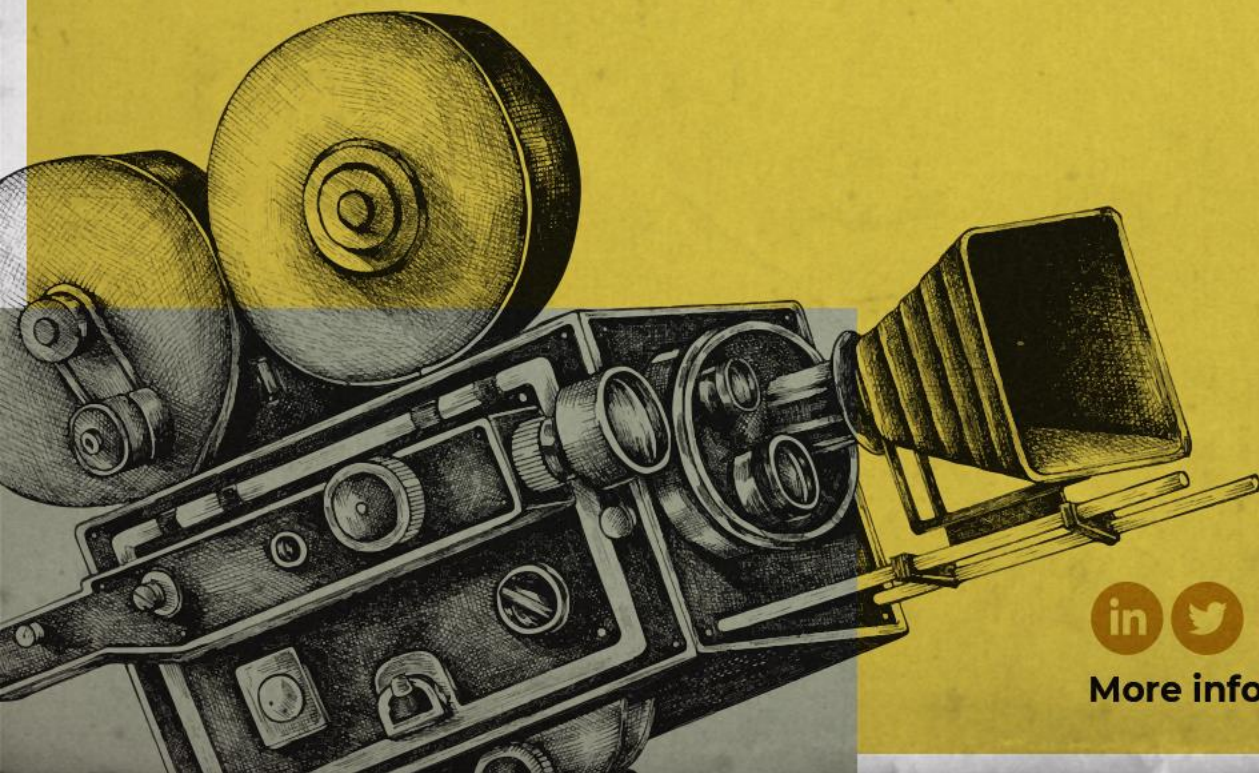
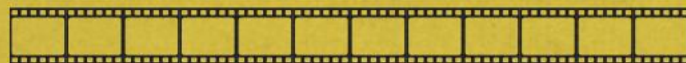


25TH MAY / 2022 ◊ VALENCIA, SPAIN

FINAL WORKSHOP

The NEMOSINE innovative
package for cultural
heritage preservation



More info at: nemosineproject.eu



NEMOSINE has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 760801.



FINAL WORKSHOP:

The NEMOSINE innovative package and solutions for 20th century cultural heritage preservation.



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High loading porous solids cellulose based membranes

Pierre TIGNOL

Centre de Recherche sur la Conservation (CRC)

Institut des Matériaux Poreux (IMAP)

Centre National de la Recherche Scientifique
(CNRS)



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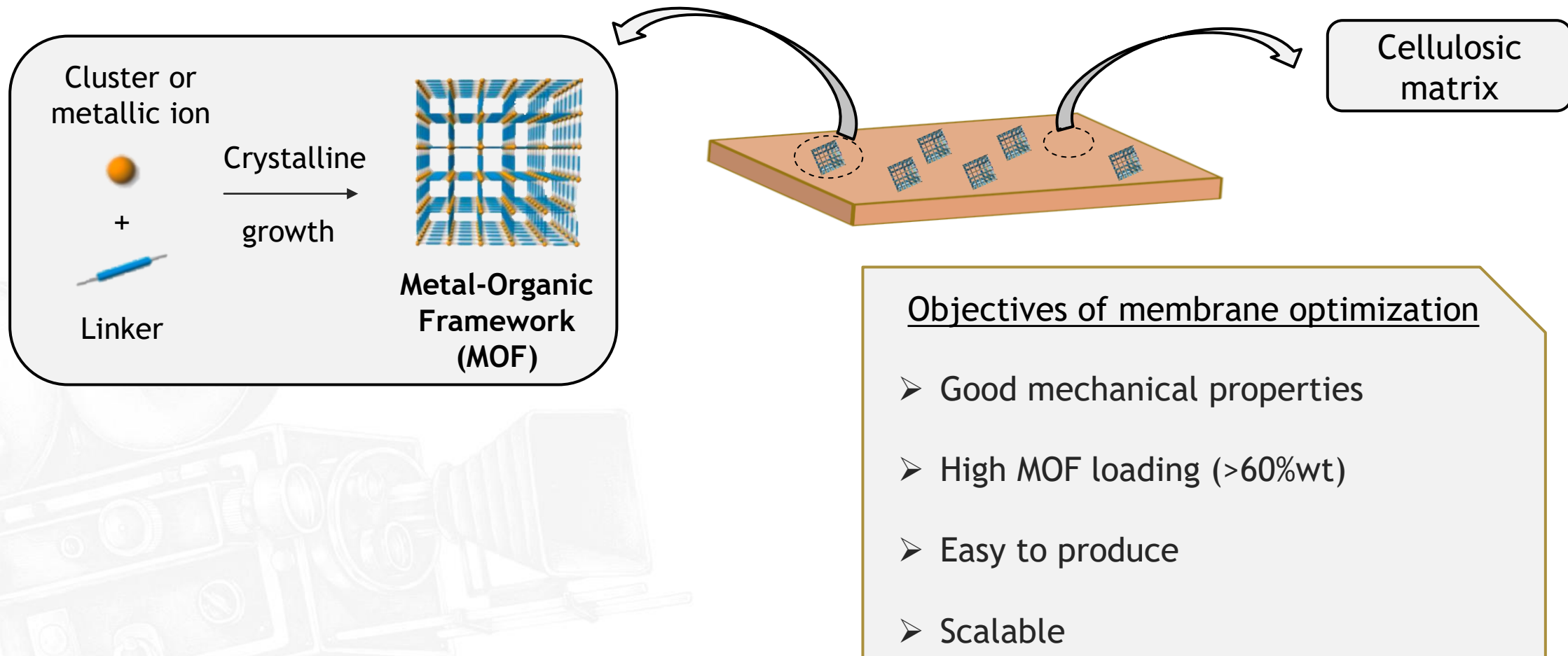


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DE RECHERCHE
SUR LA CONSERVATION

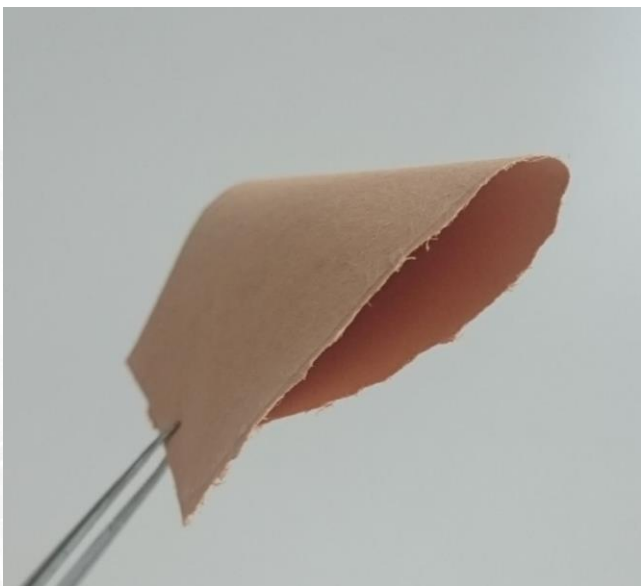


Specifications of the membrane

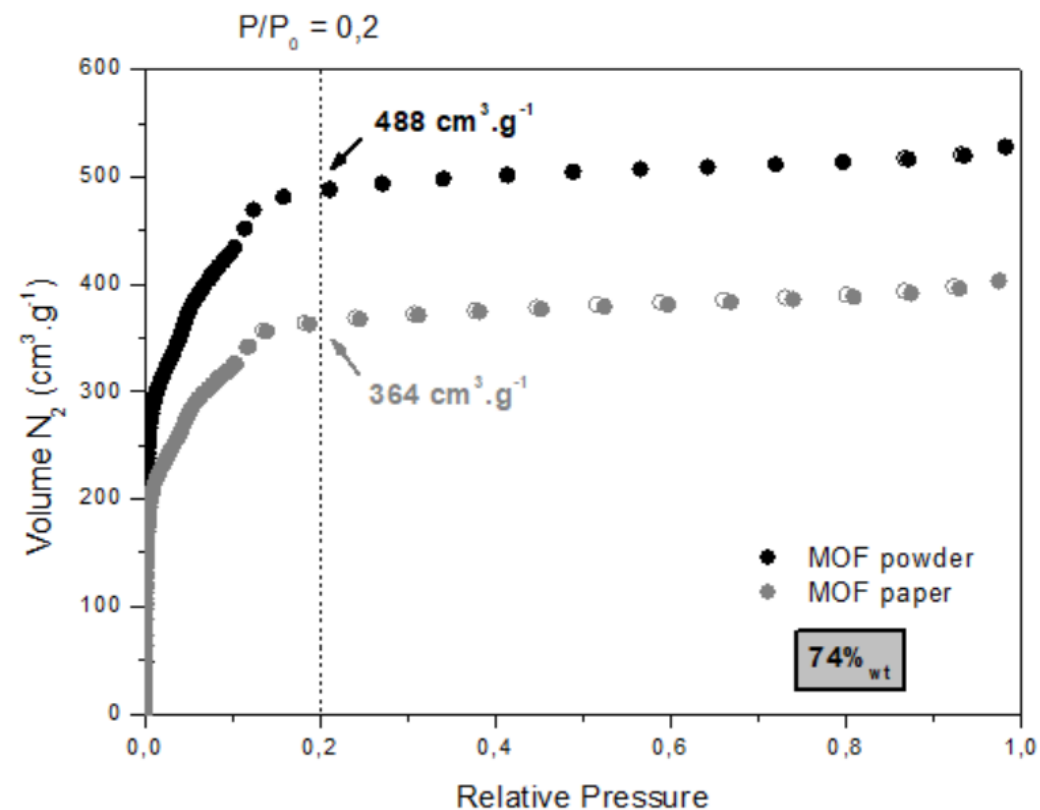


Membrane paper containing up to 75%wt MOF

Picture of the membrane showing its good mechanical properties

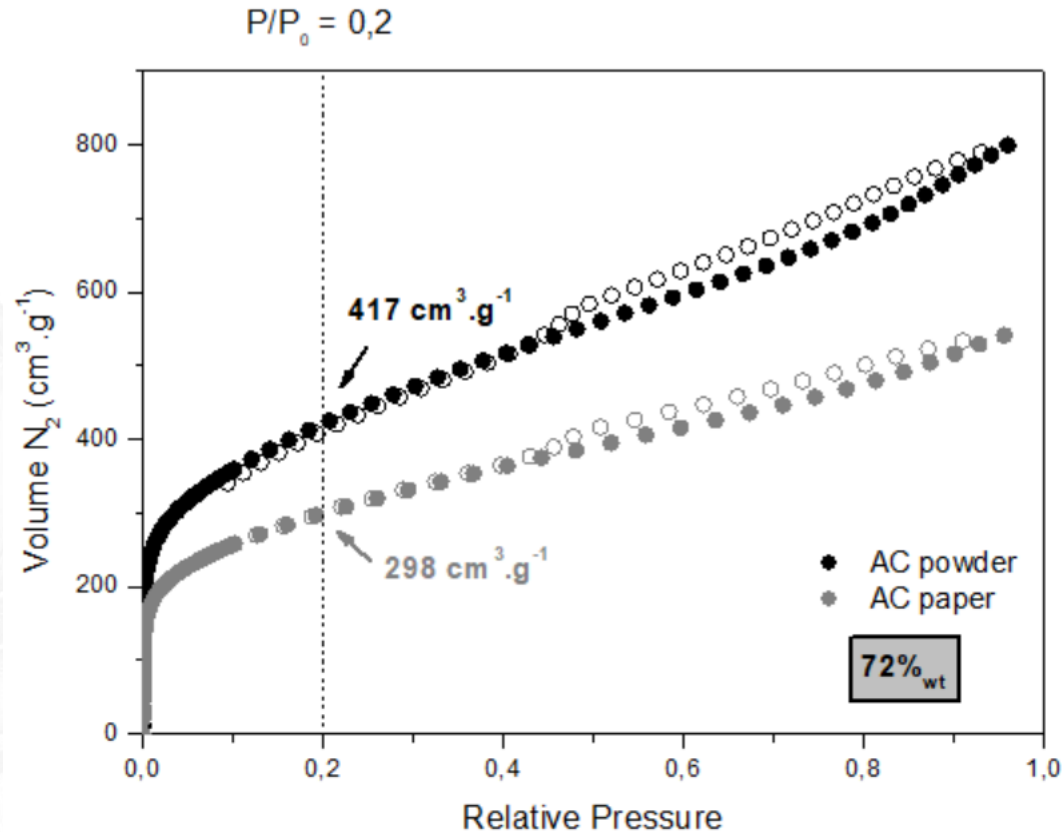


Sorptions properties of the MOF powder and membrane : N_2 reversible isotherm

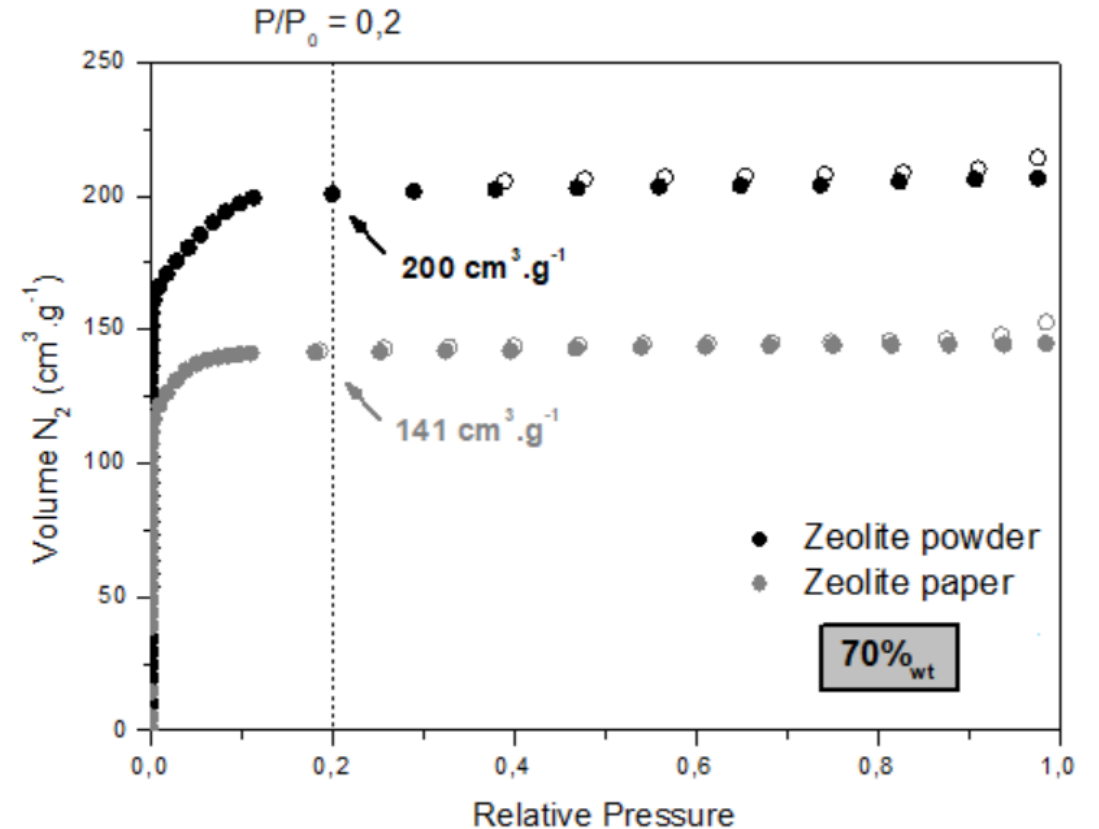


Membrane paper made with other sorbents

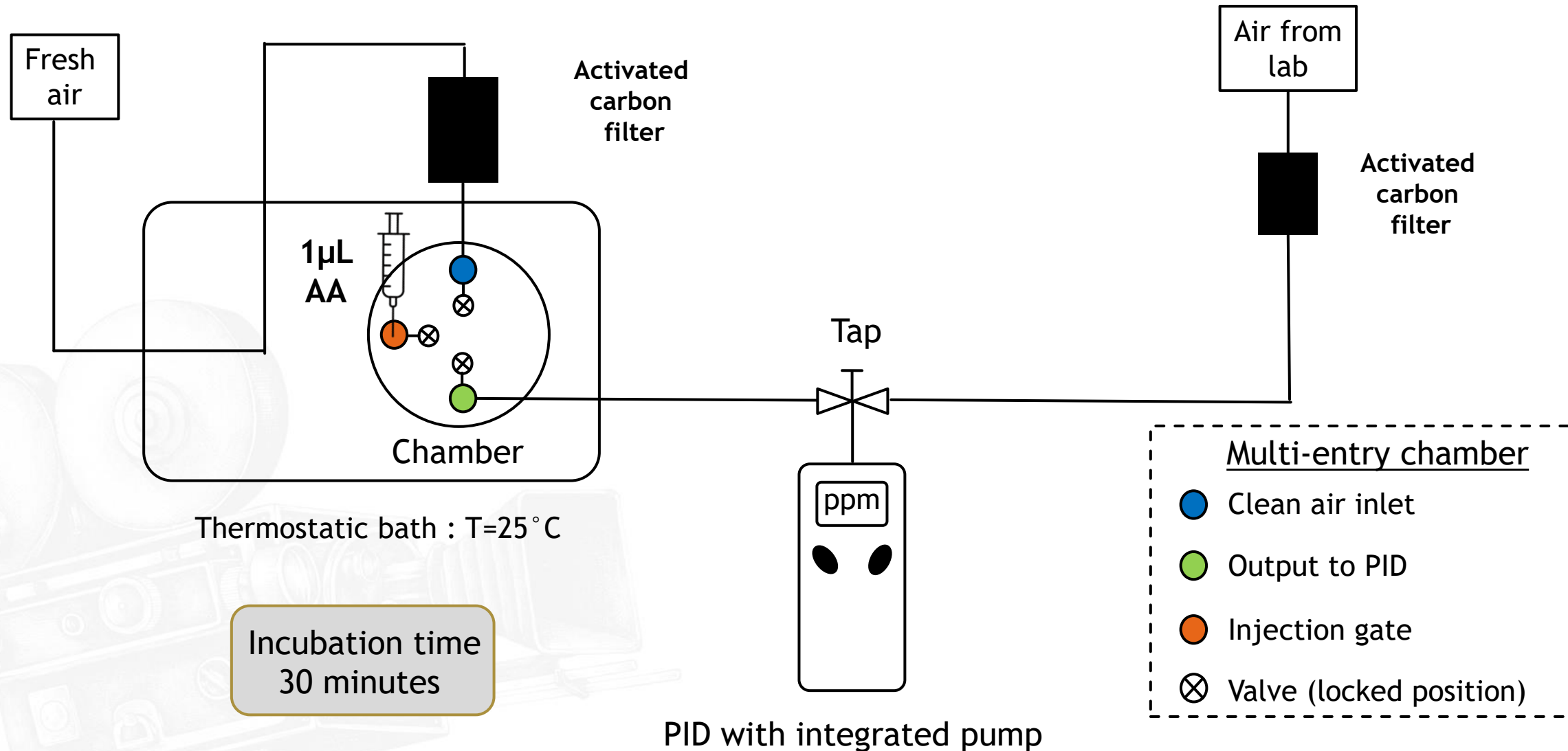
N_2 reversible isotherm of activated carbon and its corresponding membrane



N_2 reversible isotherm of zeolite and its corresponding membrane obtained at 77 K



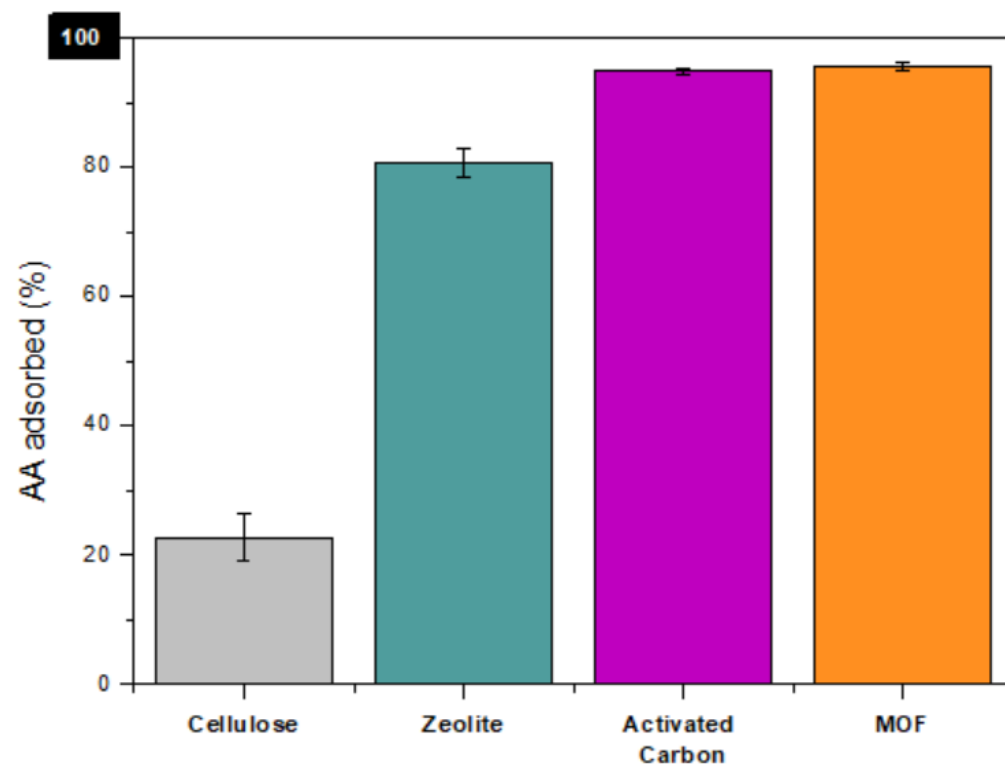
Set-up made for testing AA capture



AA capture results

Comparison of different composite sorbent

for AA capture



Vapors emitted from composites after AA capture



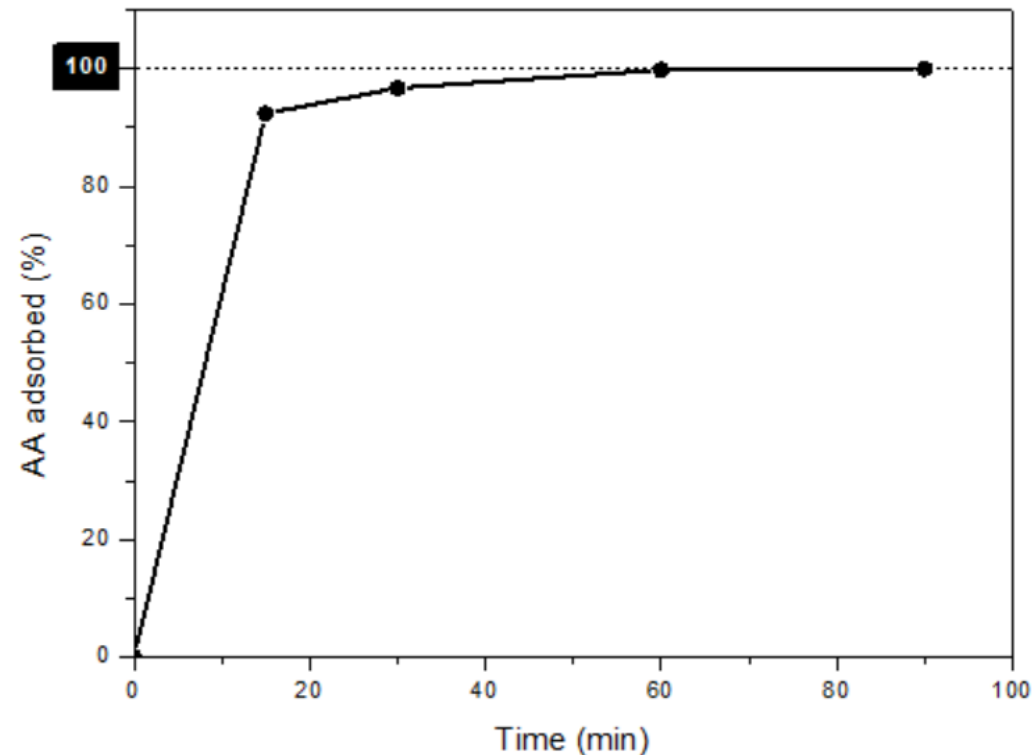
Bottle containing passive dosi-tube for AA detection

| Composite | AA concentration (ppm) |
|-----------|------------------------|
| MOF | 0 |
| Zeolite | >5 |
| AC | 0,75 |

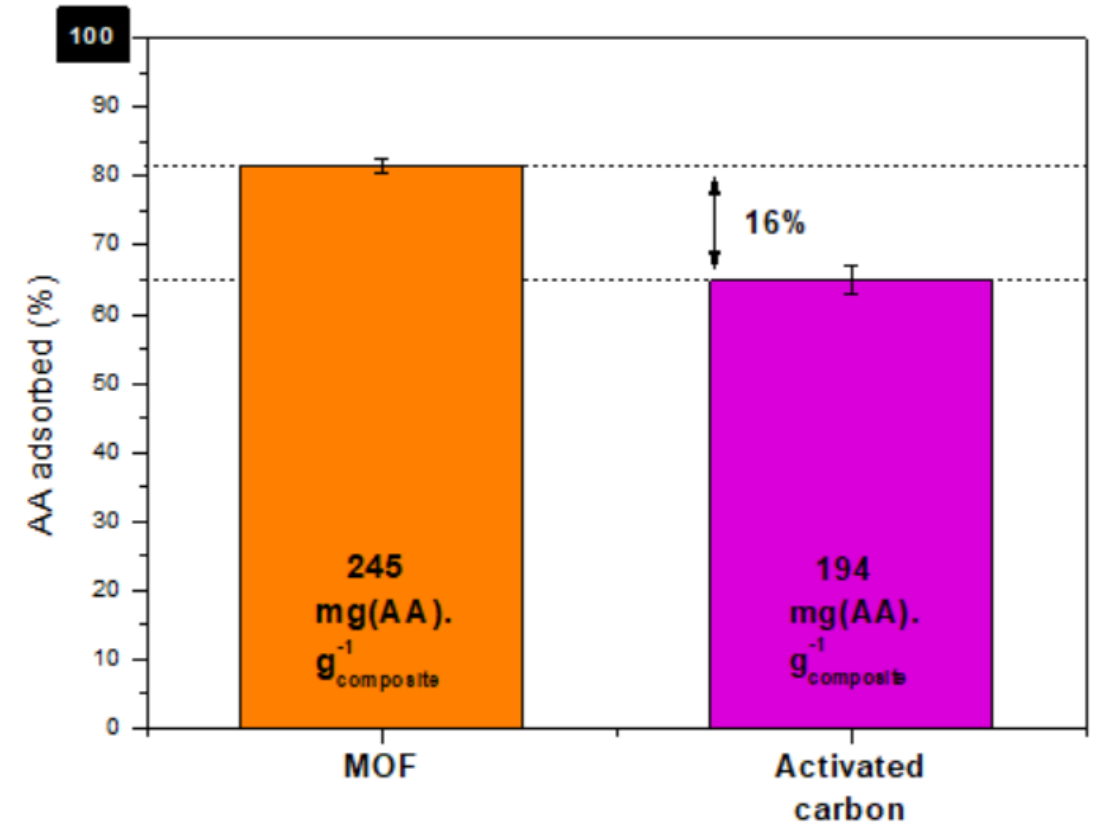
AA capture results

*AA adsorbed by 50mg MOF
increasing time*

incubation in the chamber



*AA adsorbed by MOF and AC composites
at saturation level (m=3,5mg)*



Conclusion and perspectives

- ❖ Membrane manufacturing process applicable to a wide range of porous materials (MOFs, activated carbons, zeolites)
- ❖ CNRS patent filed in march 2022
- ❖ MOF composite showed better performance for AA capture
 - ➔ Find other applications to these membranes

A special thanks goes to :

My supervisors :

- Prof. Bertrand Lavédrine (CRC, MNHN)
- Dr. Anne-Laurence Dupont (CRC, MNHN)
- Dr. Christian Serre (IMAP, ESPCI/ENS)
- Dr. Vanessa Pimenta (IMAP, ESPCI/ENS)



Aimplas collaborators for hosting this workshop



PNO Innovation SL collaborators for organizing this event

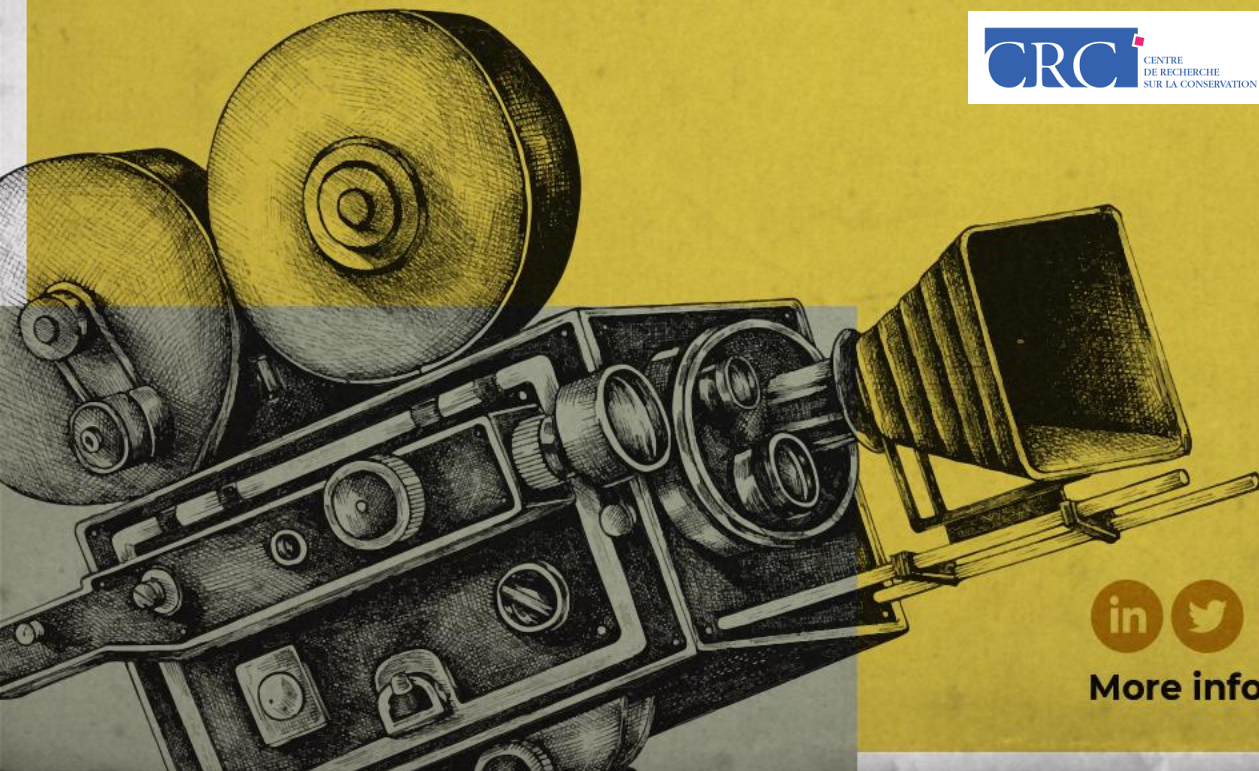
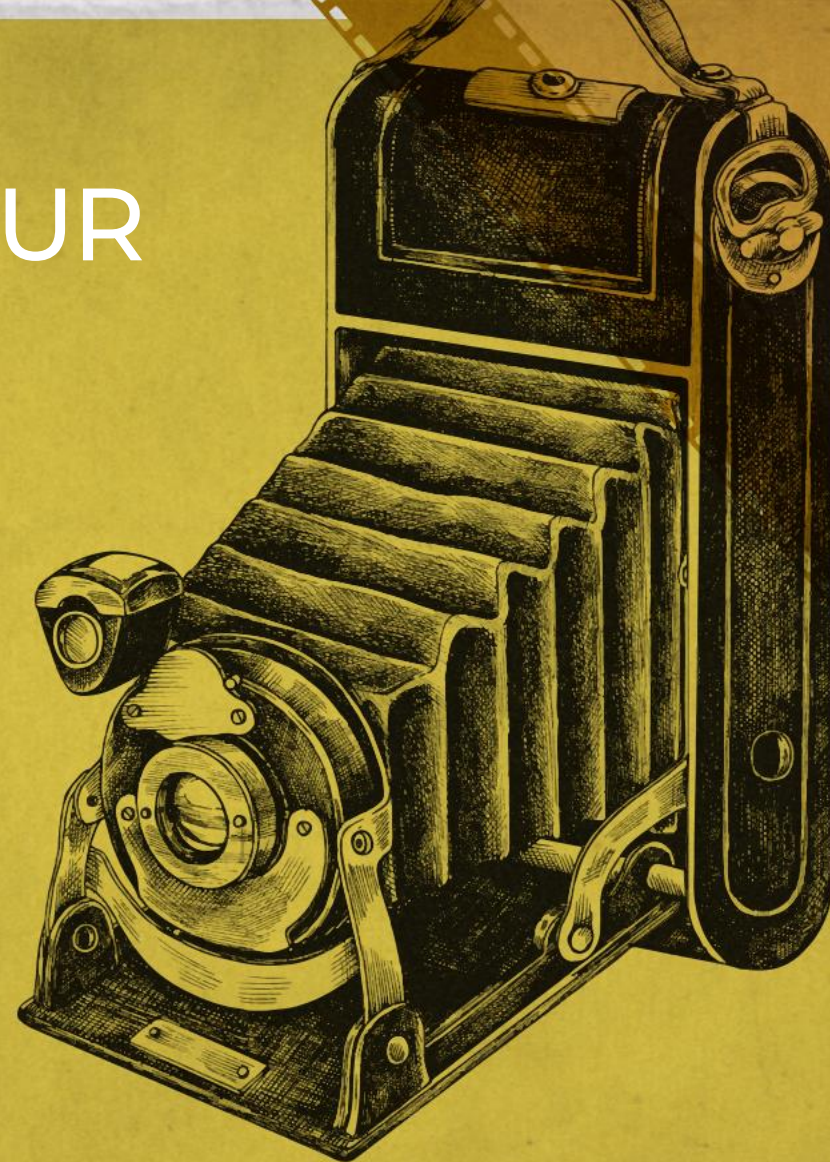




THANKS FOR YOUR ATTENTION

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More info at: nemosineproject.eu



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