

# Un coup de mousse pour bien dormir!

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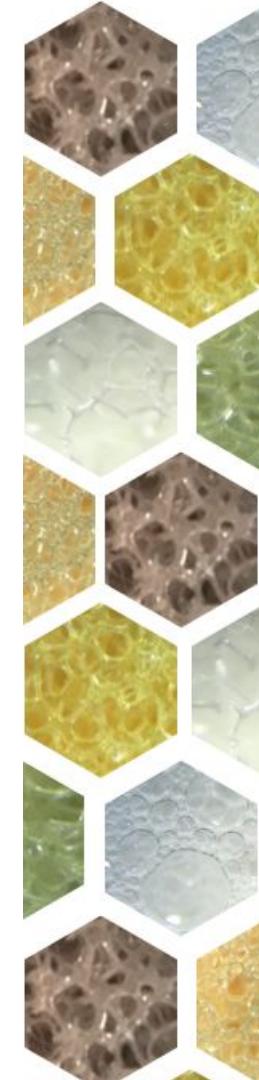


Comment choisir la meilleure mousse pour son matelas ?

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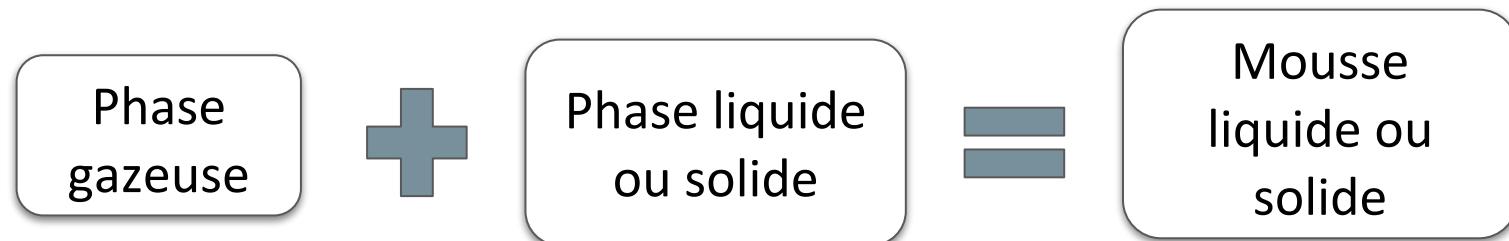
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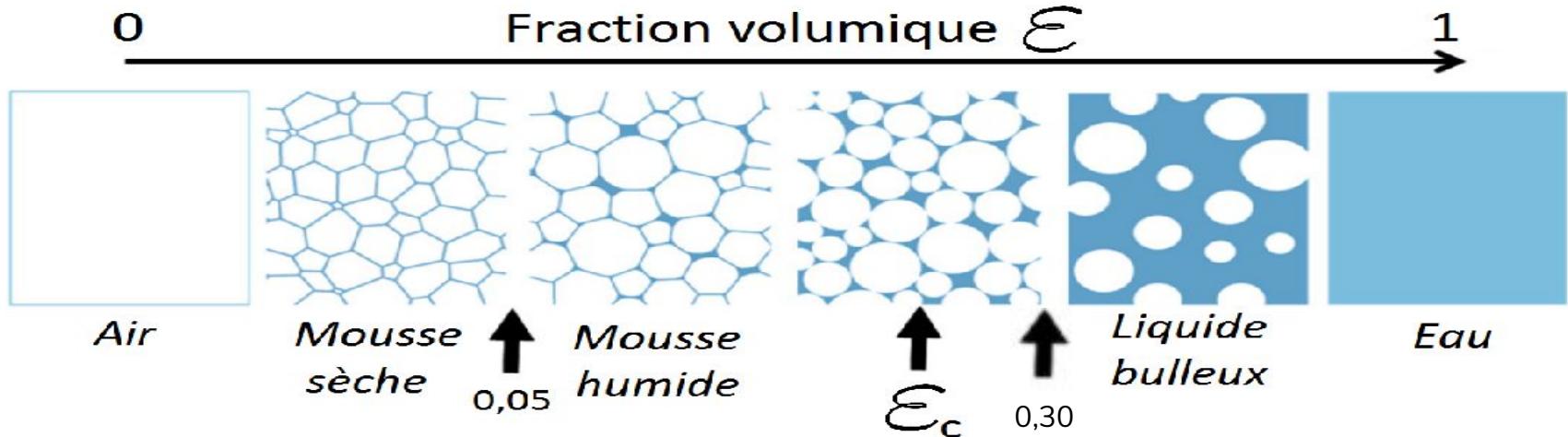
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# I- Les mousses

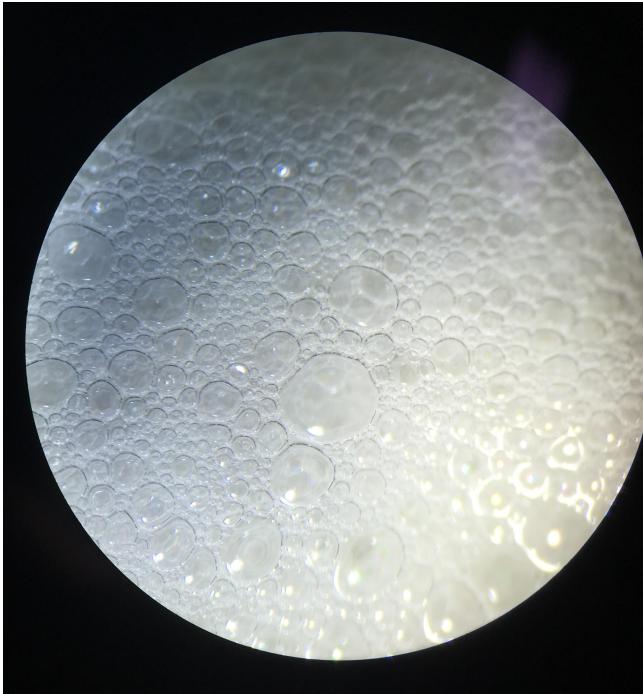


# I- Les mousses

## a- Les mousses liquides

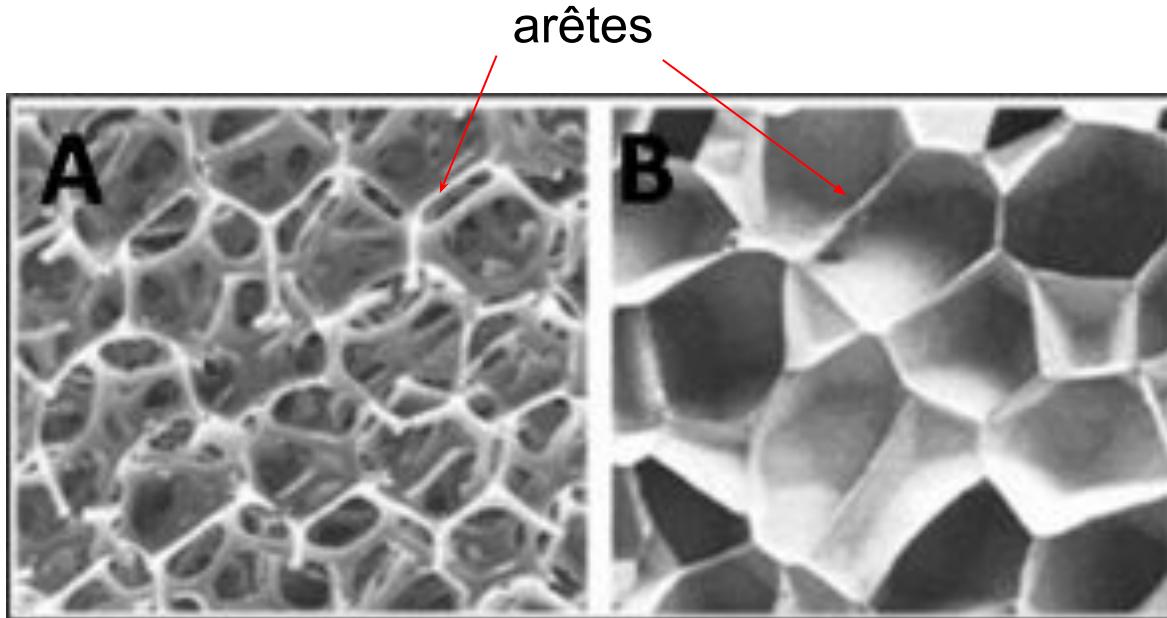


# Fabrication d'une mousse liquide : les blancs en neige



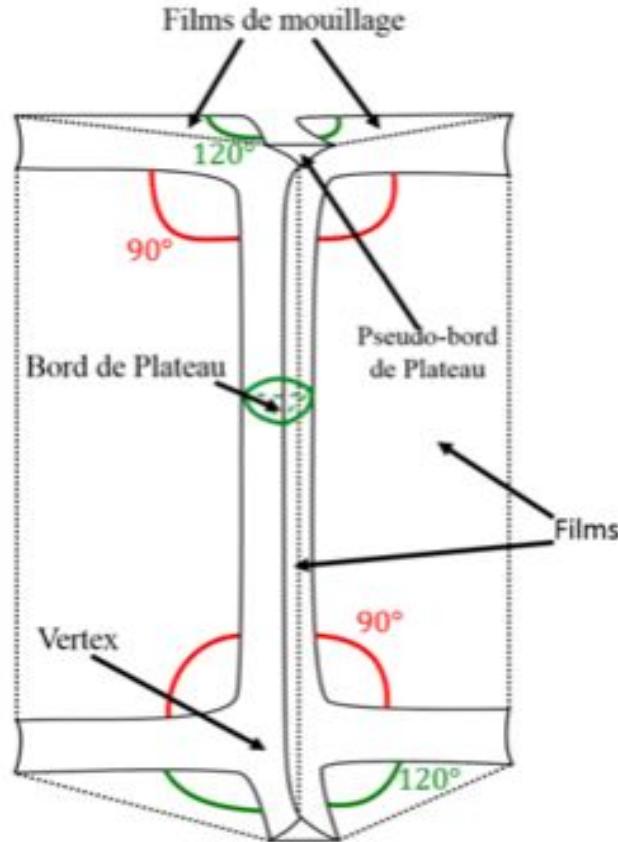
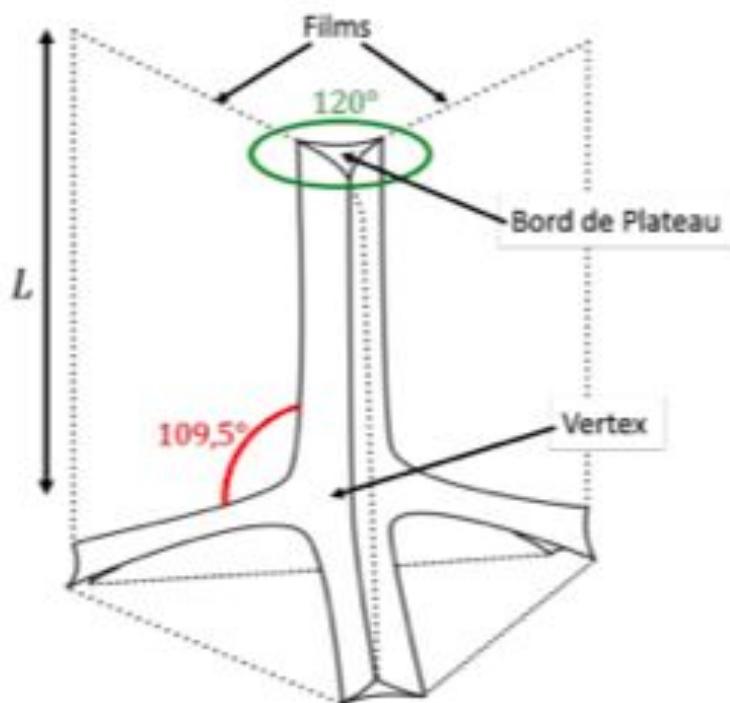
# I- Les mousses

## b- Les mousses solides

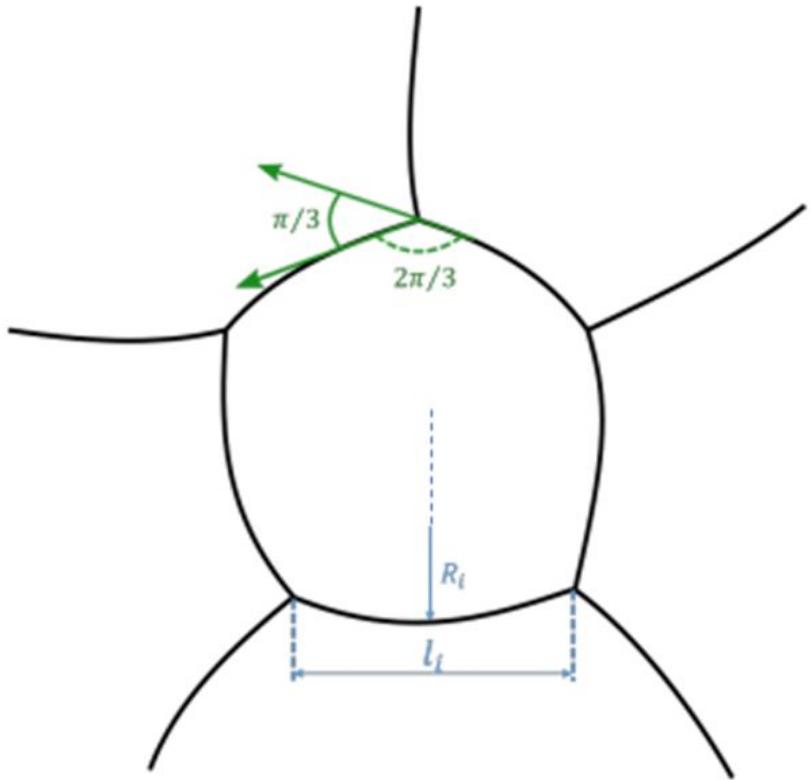


## II- L'arrangement des bulles

### a- Structure des mousses



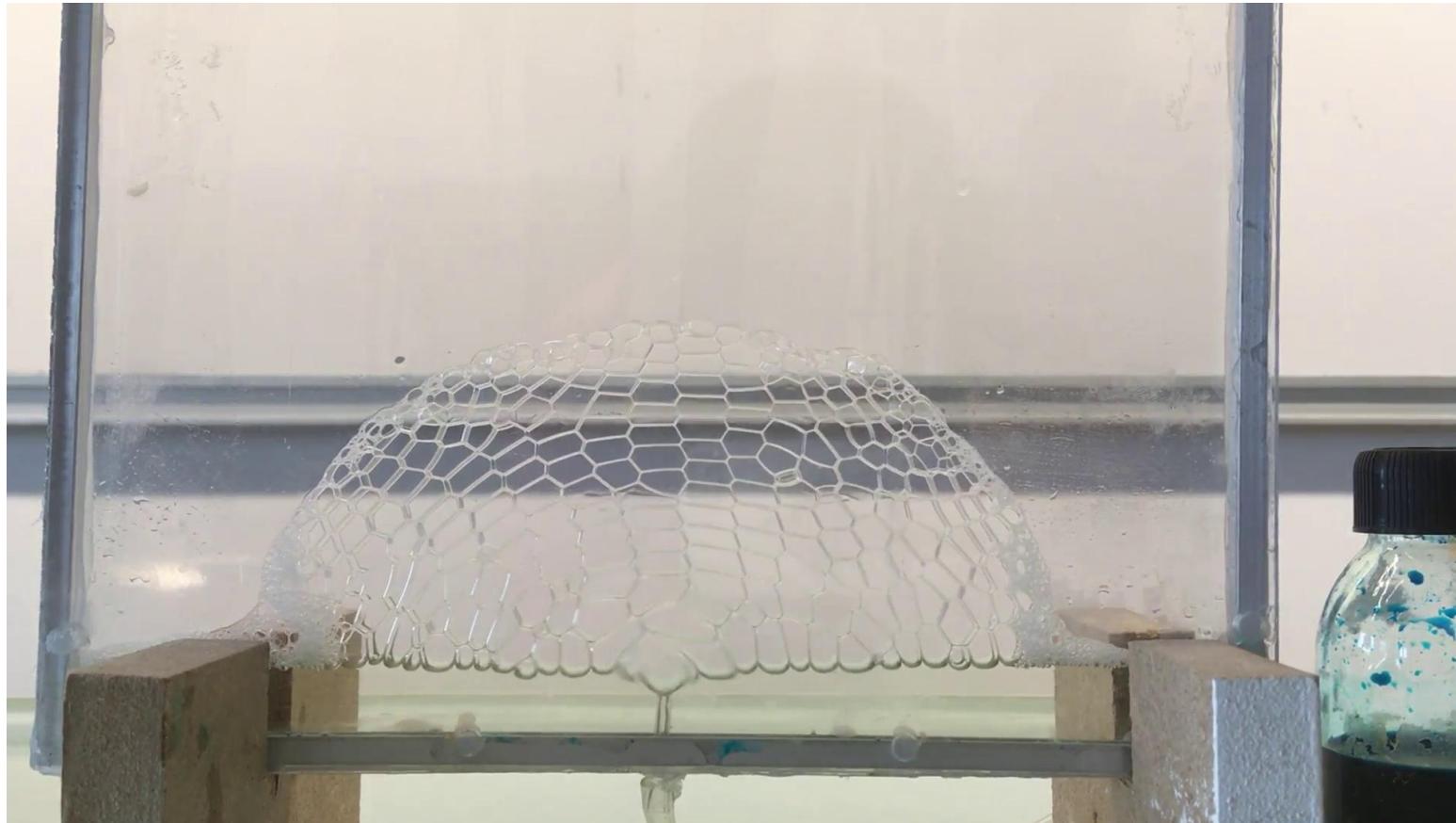
# Réalisons un petit voyage autour d'une bulle...



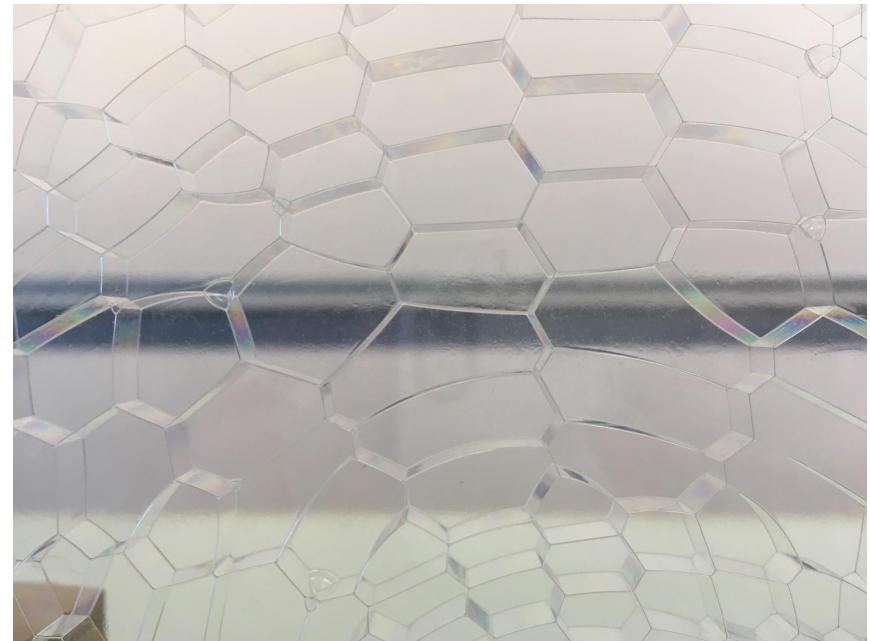
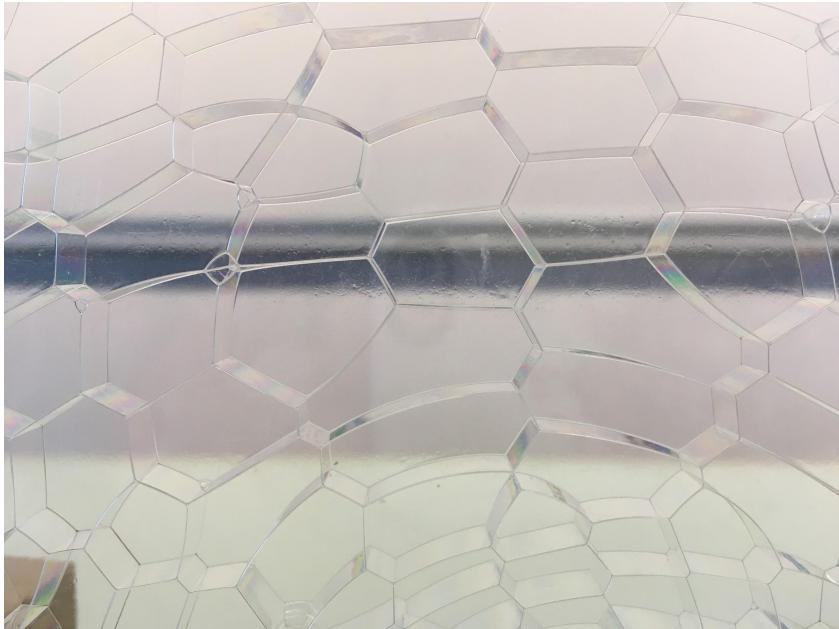
$$\sum_{j=1}^n \frac{L_j}{R_j} + n \frac{\pi}{3} = 2\pi \quad \Leftrightarrow \sum_{j=1}^n \frac{L_j}{R_j} = (6-n) \frac{\pi}{3}$$

1

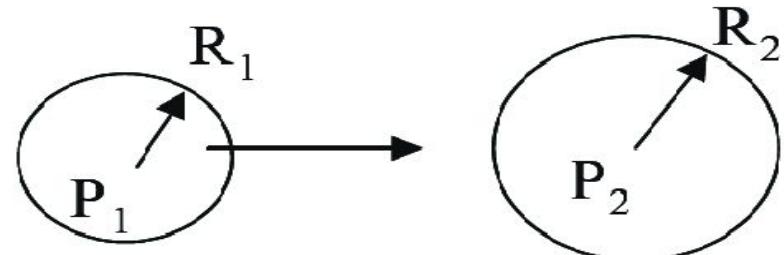
# Formation d'une mousse en 2 dimensions



# Convexité d'une bulle



# Lois de Laplace



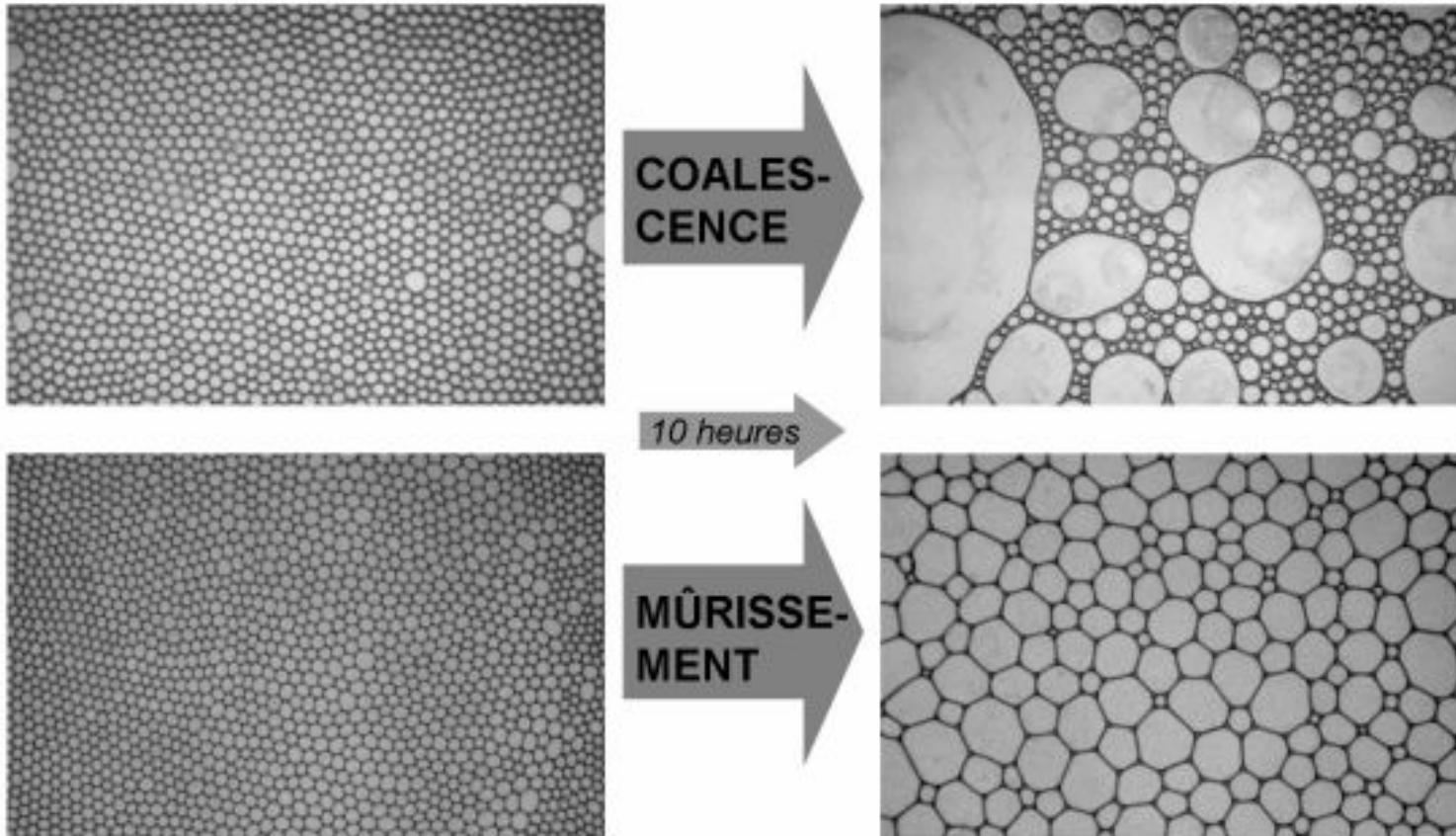
$$P_1 > P_2 > P_{\text{ext}}$$

1  
2  
3  
4  
5  
6  
7

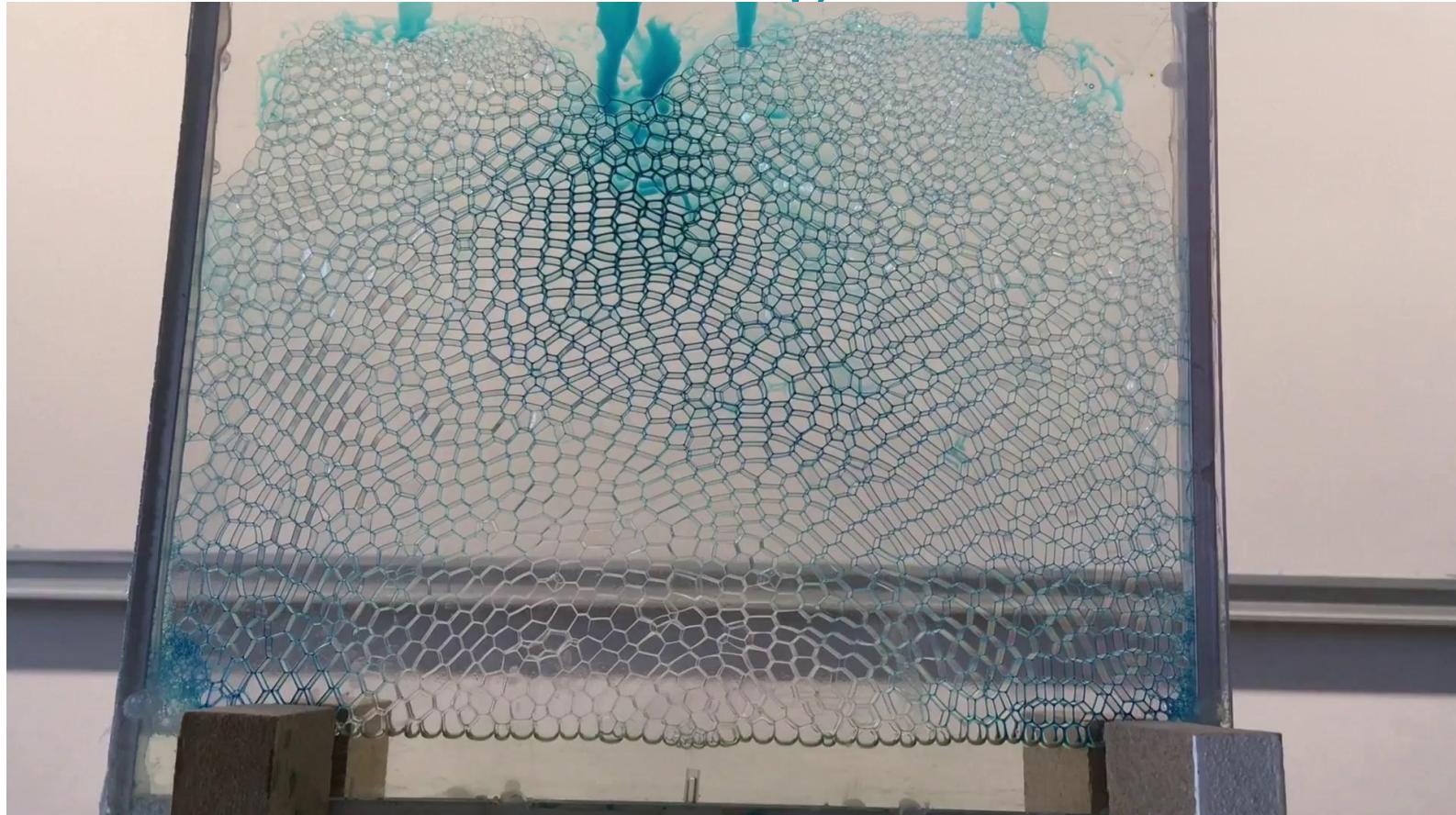


## II- L'arrangement des bulles

b- mûrissement, drainage et coalescence



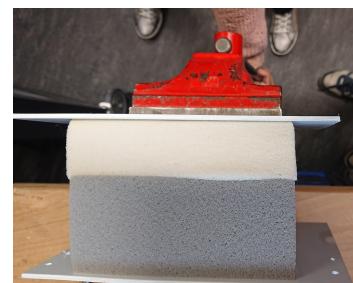
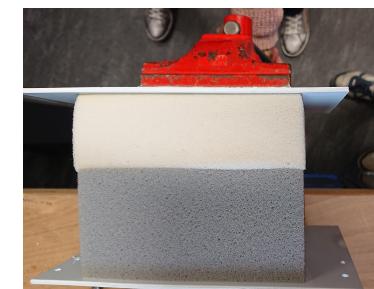
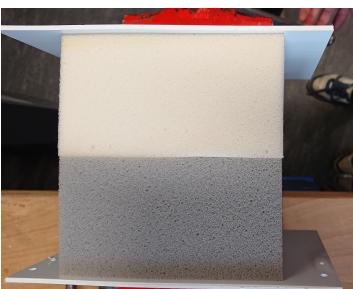
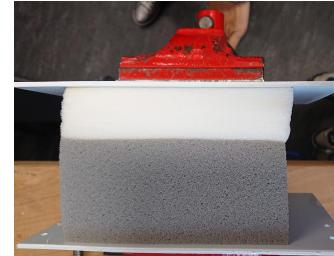
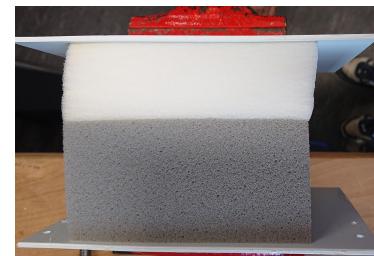
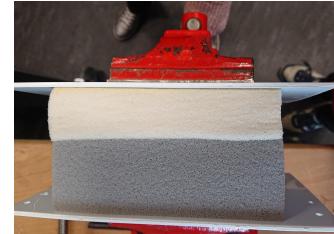
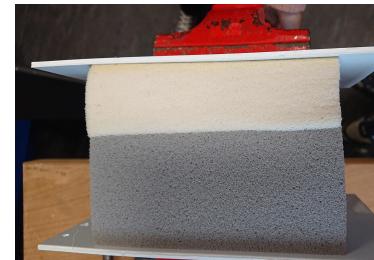
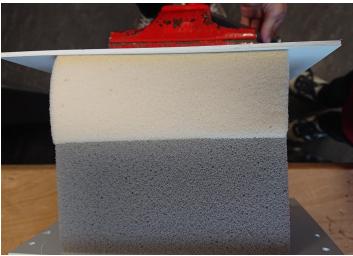
# Le drainage



Vidéo accélérée

### III- Mécanique des mousses

#### a- Compression des mousses

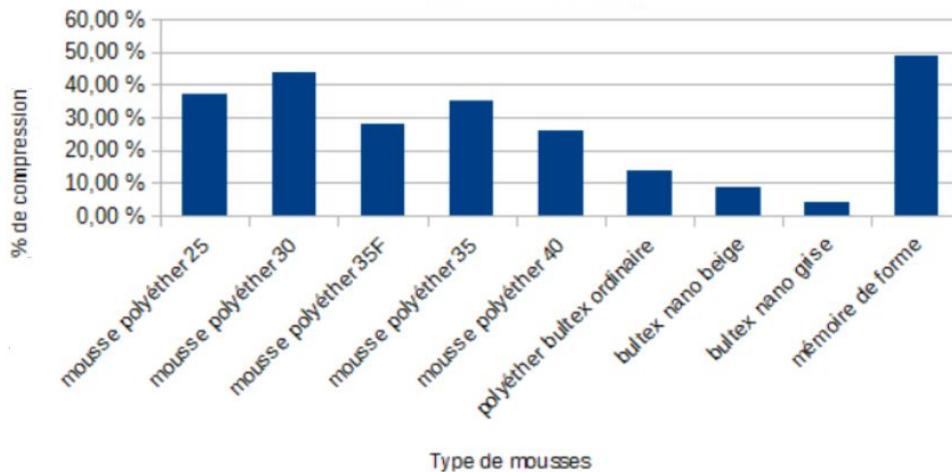


### III- Mécanique des mousses

#### b- Résistance face à un poids



Déformation des mousses au poids



### III- Mécanique des mousses

#### c- Résilience



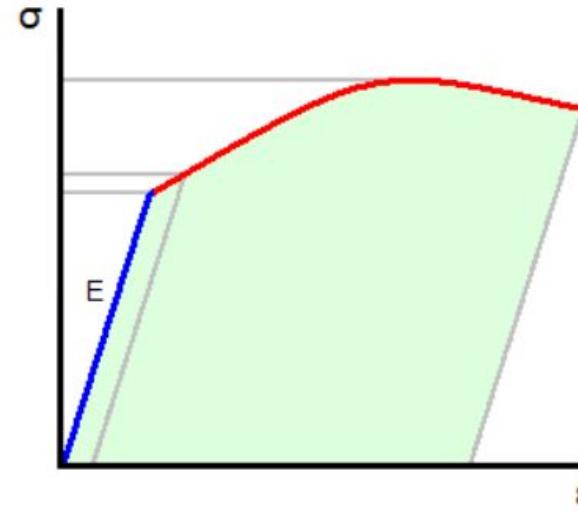
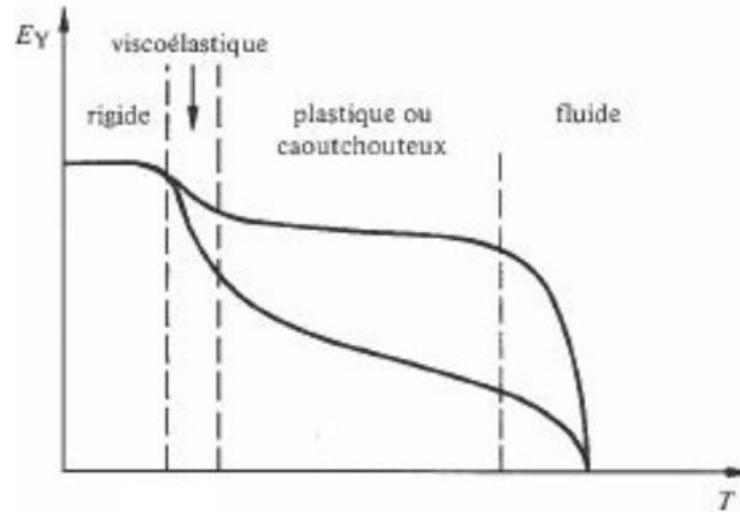
### III- Mécanique des mousses

#### c- Résilience



### III- Mécanique des mousses

d- Module d'Young et Tg



### III- Mécanique des mousses

#### e- Cellules ouvertes et résistance

