# Electro-dripping & Interfacial reaction
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ÉCOLE NATIONALE D'INGÉNIEURS DES TECHNIQUES DES INDUSTRIES AGRICOLES ET ALIMENTAIRES

## Simple dropping

$$\frac{\pi}{6}d^3 g = m \quad g \ = \ \pi \ d_e \ \gamma$$

d (mm) vs needle diameter (mm)

• Large capsules
• Low flow (50 mL/h)

## Electro-dripping

O-20 kV

$$mg = \pi d_e \ \gamma_o \left(1 - \frac{U^2}{U_{cr}^2}\right)$$

jet formation

d (mm) vs U (kV)

$U \nearrow$
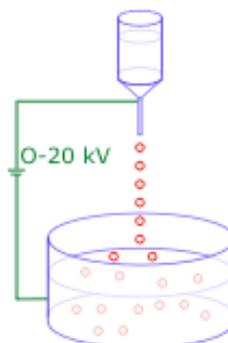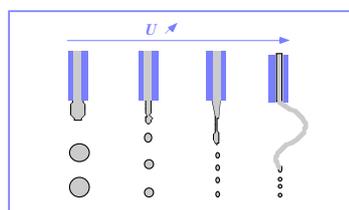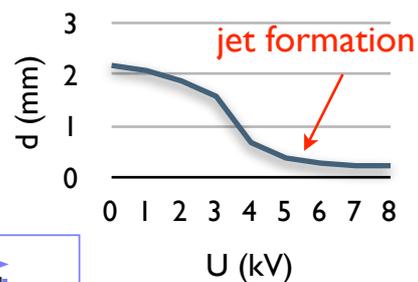
• Small capsules
• Low flow

• **Tool to develop formulation**
• **Biomedical applications**

## Interfacial Polymerization

Continuous water phase

$NH_2-(CH_3)_6-NH_2$
HCl

Polyamide membrane

$ClOC-(CH_3)_6-COCl$

oil dropplet
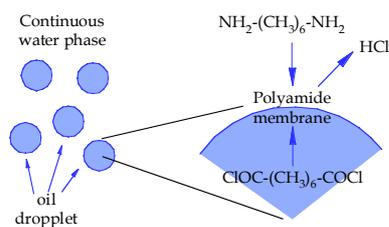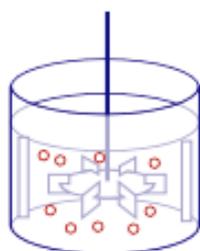
• Very fast reaction
• pH > 12
• Chloroform/cyclohexane
• Porous membrane

## Interfacial Cross-linking

Continuous water phase

Polyamine

Polyamide membrane

Cross-linker

oil dropplet
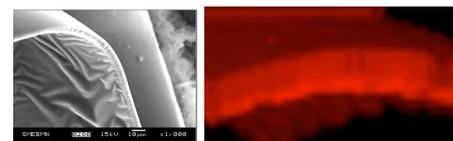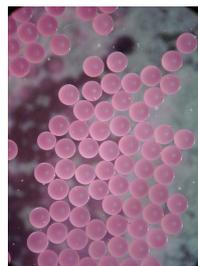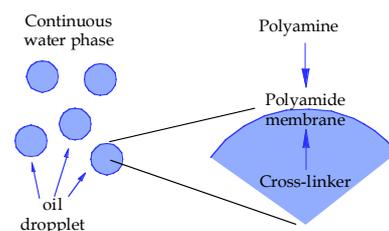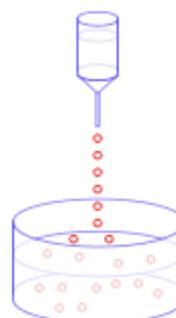
• Fast reaction
• pH ~ 6.5
• Vegetal oil
• dense membrane