

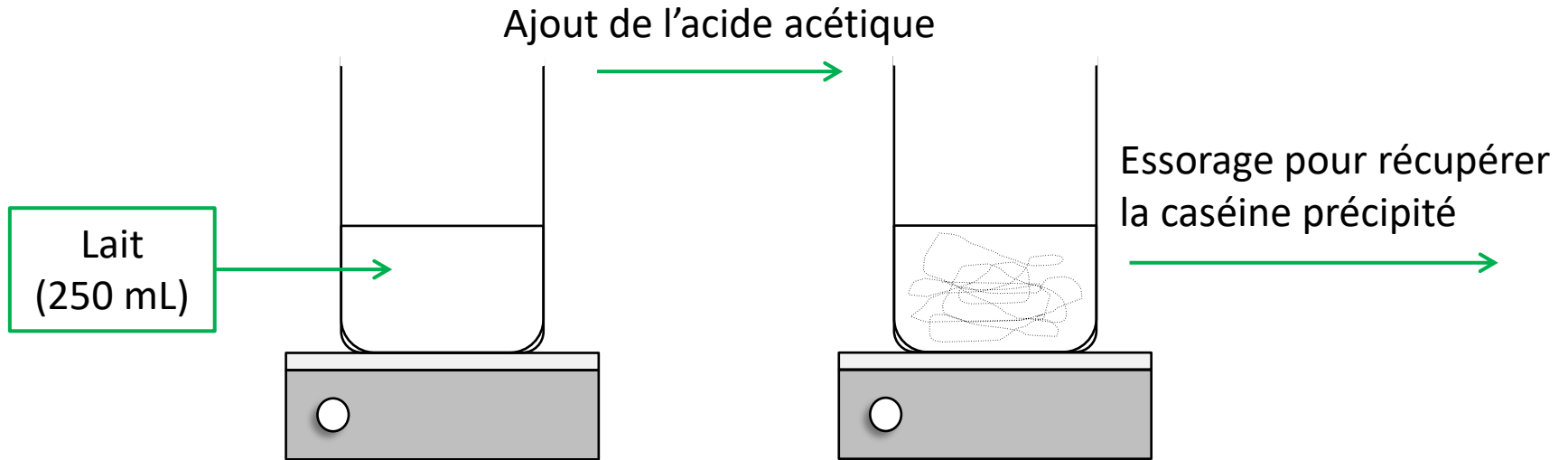
Polymères

Agrégation 2020




Où trouve-t-on les polymères ?



Extraction de la caséine du lait



Exemple de polymères synthétiques

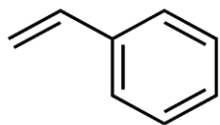
Polymère	Représentation	Monomère	Utilisation
Polychlorure de vinyle	$\left[\begin{array}{cc} \text{H} & \text{Cl} \\ & \\ -\text{C} & -\text{C}- \\ & \\ \text{H} & \text{H} \end{array} \right]_n$	$\begin{array}{c} \text{H} \quad \text{Cl} \\ \diagdown \quad \diagup \\ \text{C} = \text{C} \\ \diagup \quad \diagdown \\ \text{H} \quad \text{H} \end{array}$	
Polystyrène	$\left[\begin{array}{c} \text{C}_6\text{H}_5 \\ \\ -\text{C}-\text{CH}_2- \\ \\ \text{H} \end{array} \right]_n$	$\text{C}_6\text{H}_5-\text{CH}=\text{CH}_2$	
Nylon 6-6	$\left[\text{C}_6\text{H}_{10}\text{N}_2\text{O}_2 \right]_n$	$\text{Cl}-\text{C}(=\text{O})-(\text{CH}_2)_4-\text{C}(=\text{O})-\text{Cl}$	

Synthèse du polystyrène

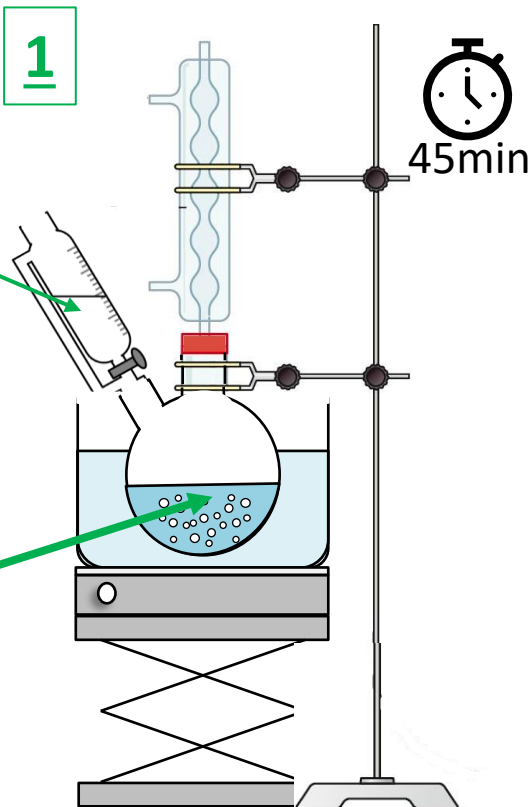
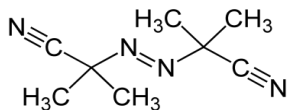
1

Toluène
(10mL)

Styrène (5,0mL)



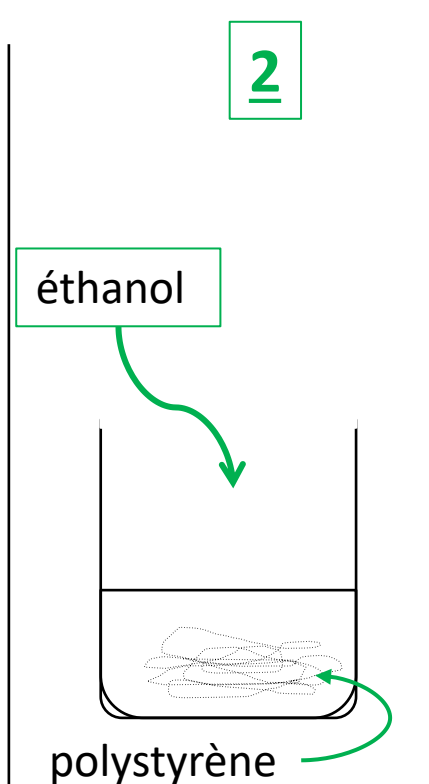
+AIBN (2,0mL)



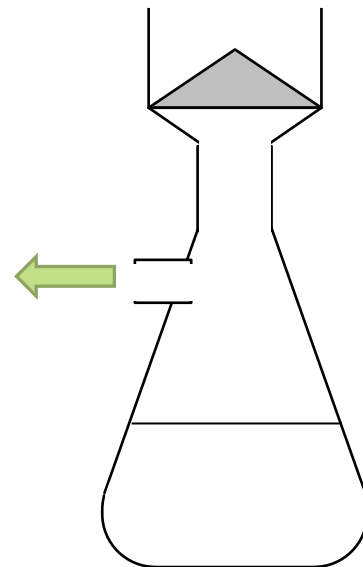
2

éthanol

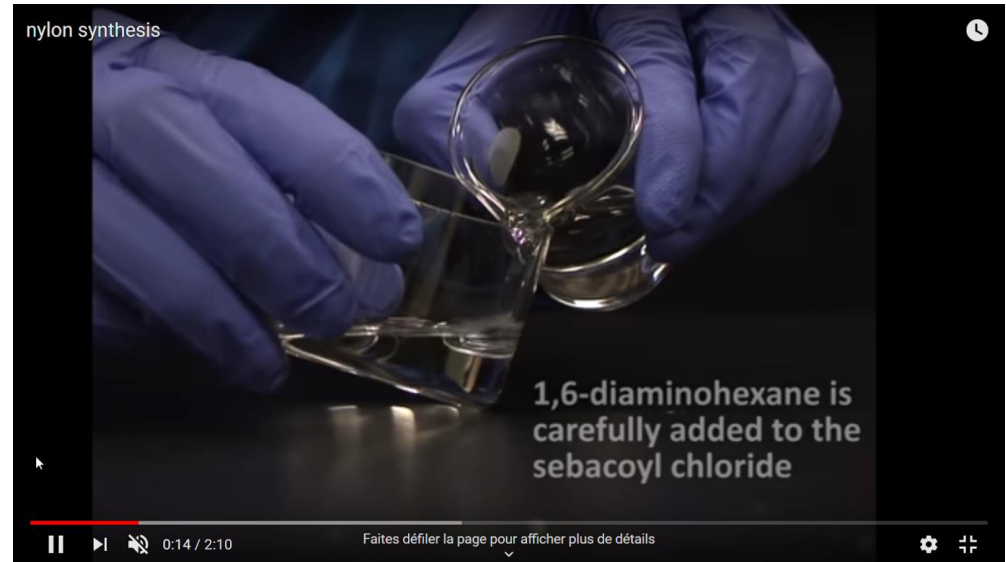
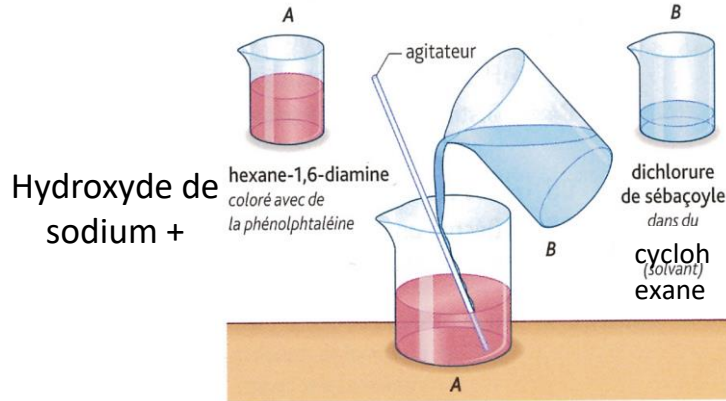
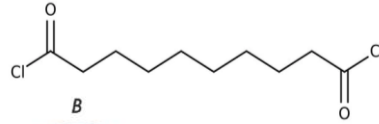
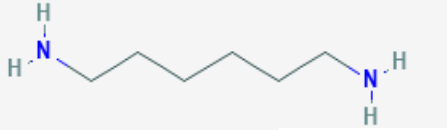
polystyrène



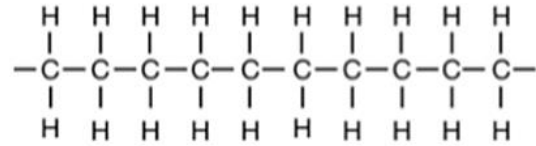
3



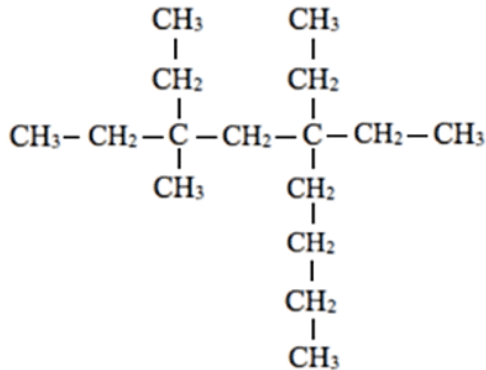
Synthèse du Nylon 6-10



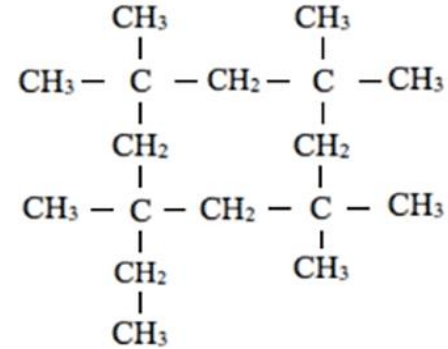
Structures des polymères



Linear Polymer

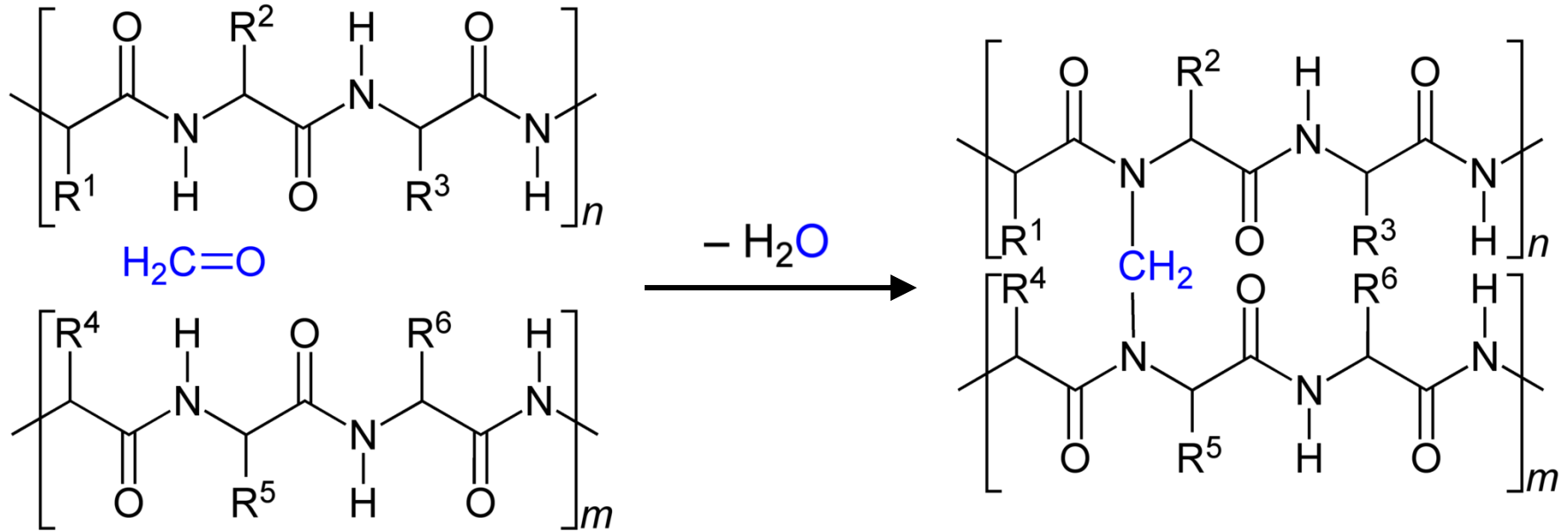


Branched Polymer

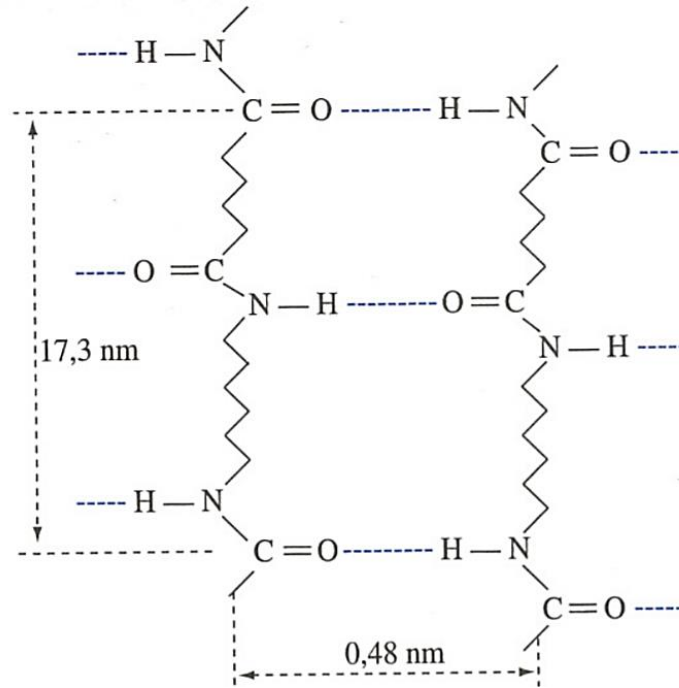


Polymère réticulé

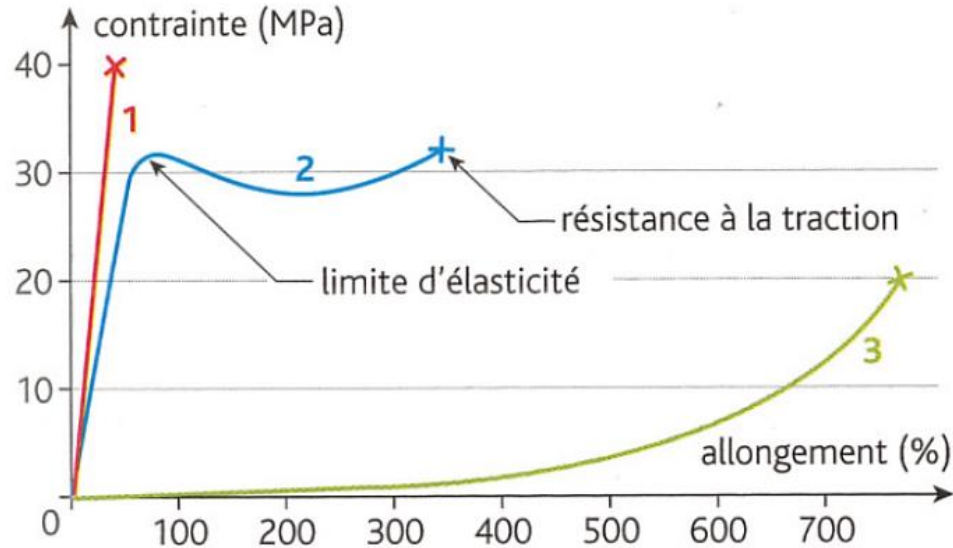
Polymère réticulé : la Galalithe



Liaison hydrogène : le Nylon 6-6



Propriétés mécanique



Tests de traction.

1 : plastique dur ; 2 : plastique souple ; 3 : élastomère.

L'élongation n'est réversible que pour les élastomères.

Le point en haut de courbe correspond à la rupture.

Merci
