

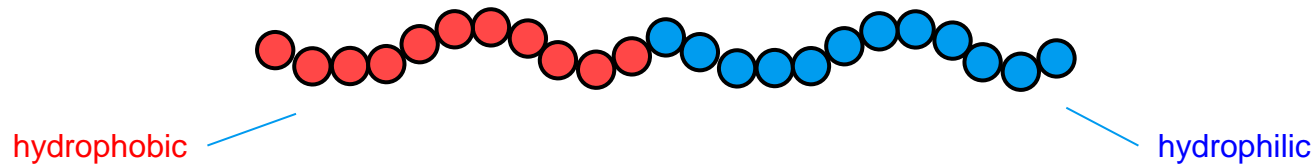


Research projects for MSc

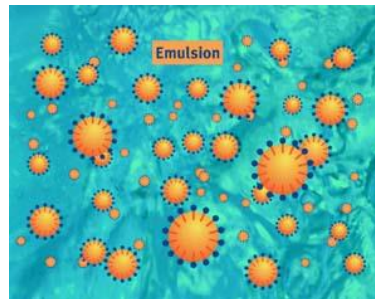
Dr. Patrizio Raffa
Assistant Professor
Polymeric Products



Polymeric Surfactants



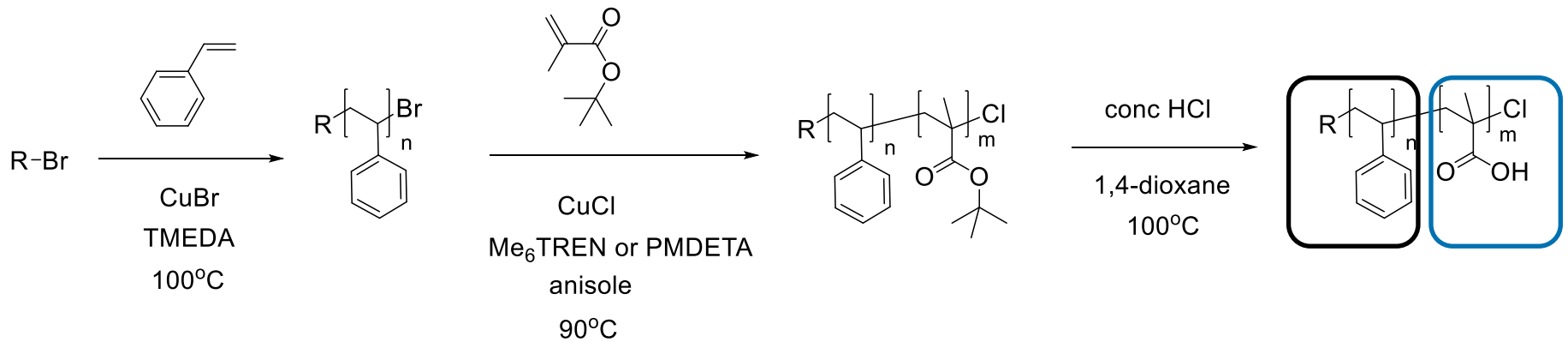
Rheology (viscosity) control



- hydrogels
- oil recovery
- biomedical materials
- drug delivery
- emulsifier
- emulsion stabilization
- coatings
- ...

IFT decrease and Emulsion stability

Structure-properties study



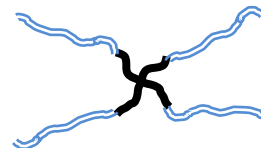
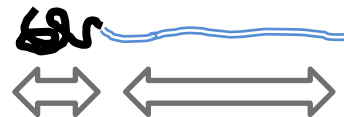
Structure-properties relationships
(more fundamental research)

Synthesis



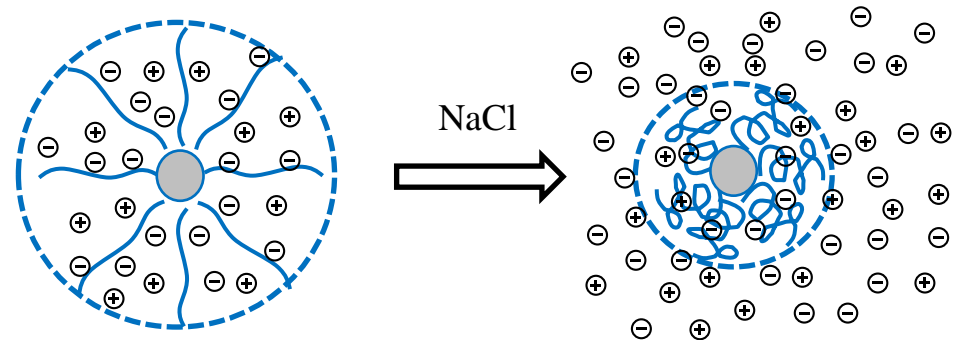
Rheology

Surface activity

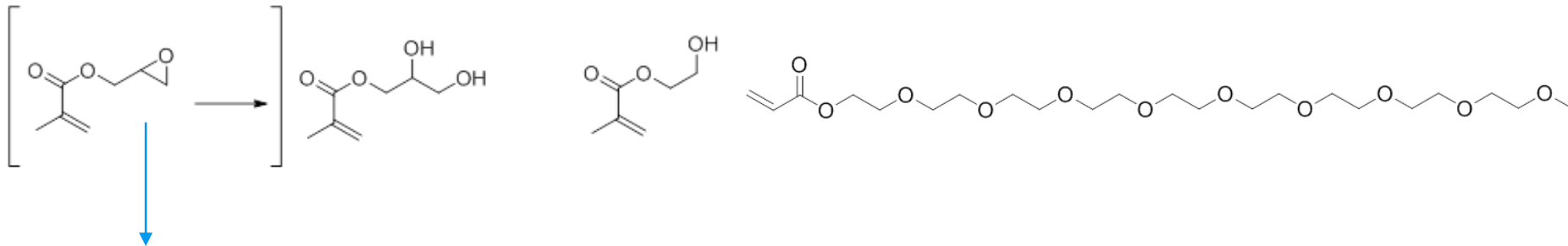


Structure-properties study

Reduce salt-sensitivity
(for EOR or other applications)



Use of neutral hydrophilic partners



can be used for cross-linking / functionalization (e.g pyrene = fluorescent)

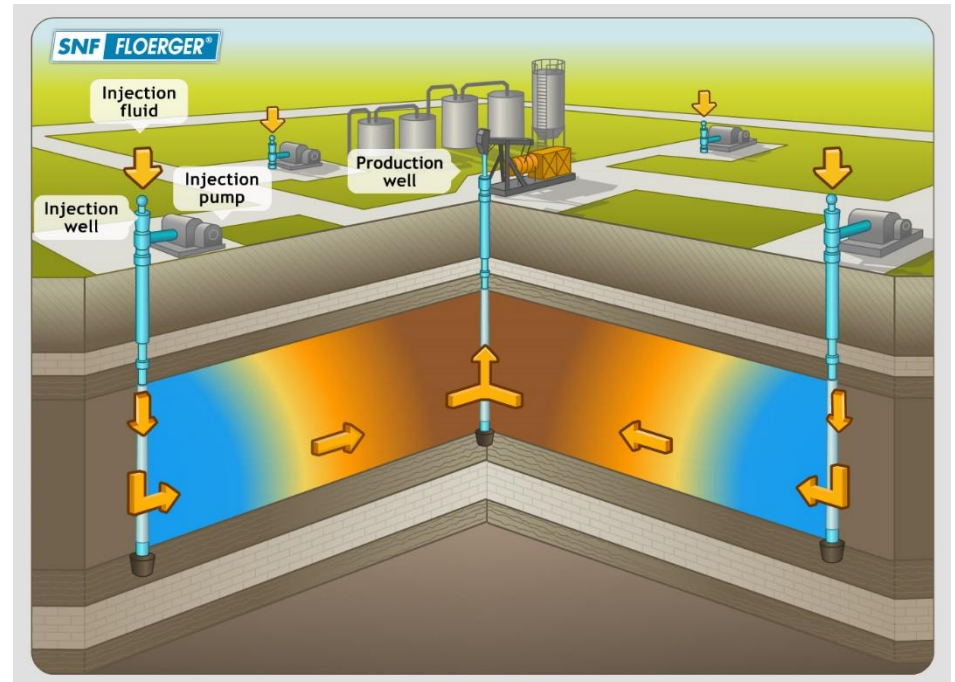
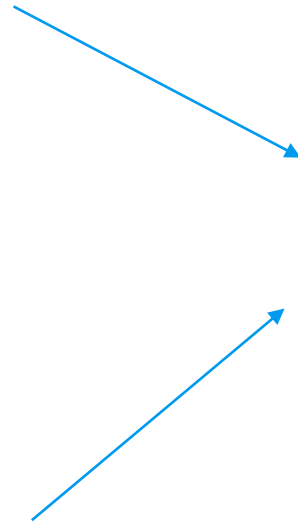
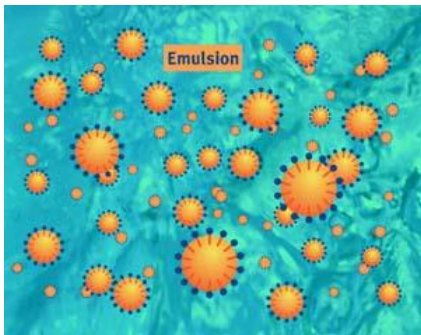


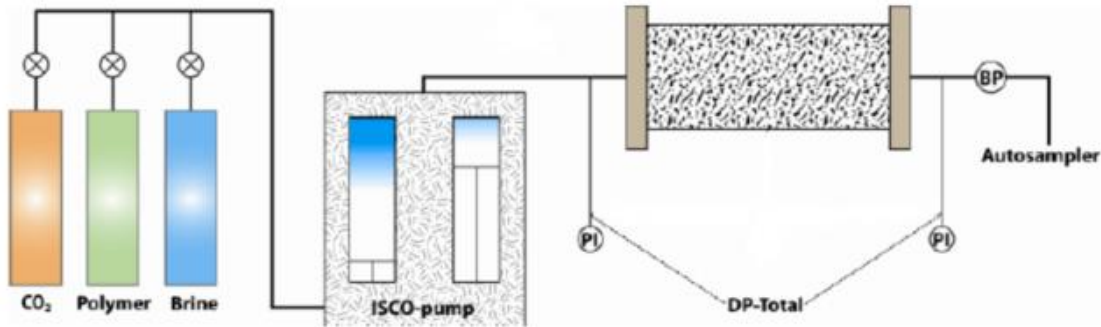
Structure-properties study

- > More fundamental / less applied
- > Freedom to stir research where you want
- > Available from now
- > No PhD lab supervisor
- > No companies involved



Polymeric surfactant for EOR







Polymeric surfactant for EOR

- > synthesis / properties 70 %
- > oil recovery test 30 %
- > available from may/june
- > PhD supervisor



Bio-based polymeric surfactants

From sugar beets

Waste from sugar industry



Sugar molecules



*Chemical
 modification*

Hydrophilic
 monomer



(co)polymerization

Polymeric
 surfactants



CRODA

adhesives/paints

dalli
g r o u p

detergents

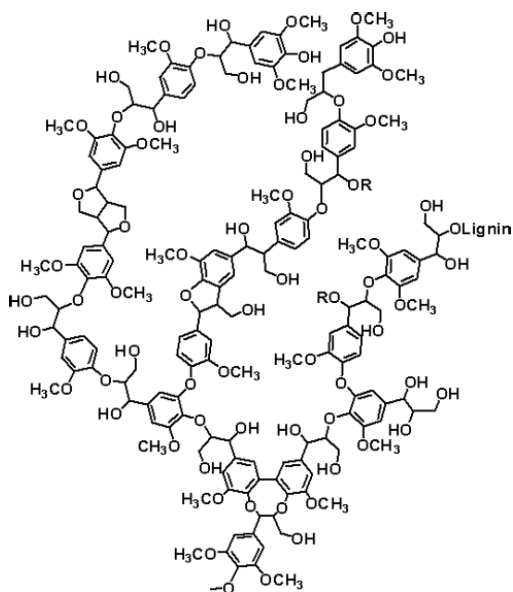
allnex
The Coating Resins Company

coatings

available now / no PhD

Bio-based polymeric surfactants

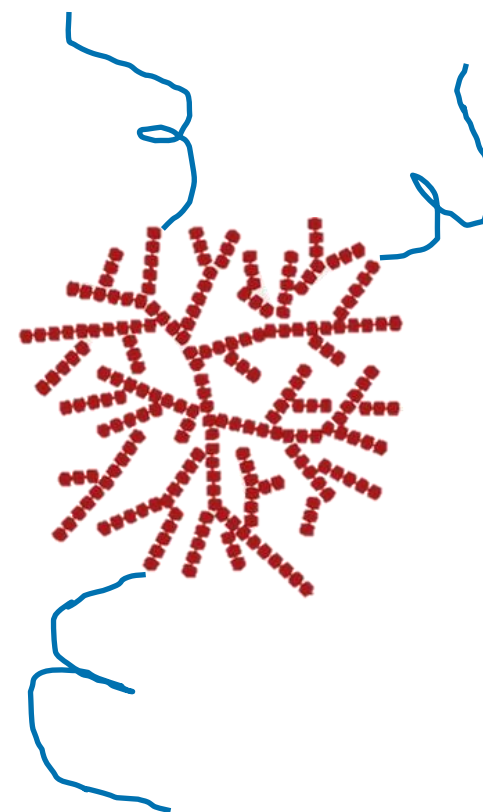
From lignin (with P. Deuss)



hydrophobic



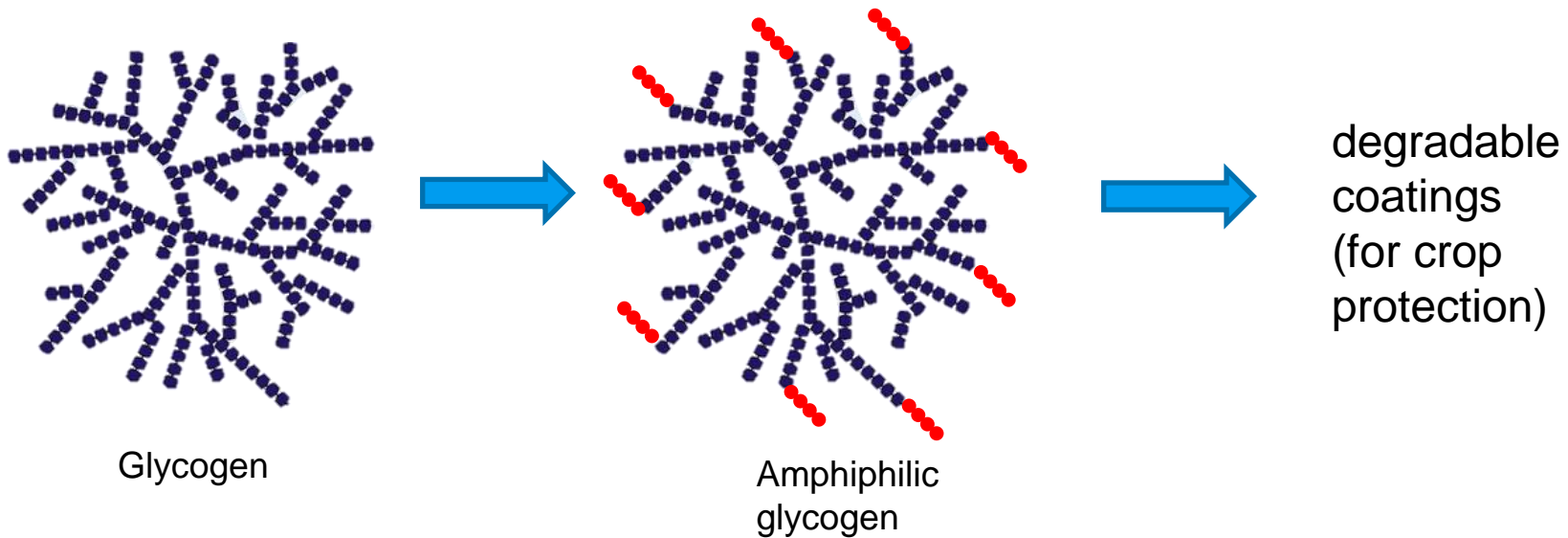
hydrophilic monomer





Bio-based polymeric surfactants

from nanoglycogen (with Marc van der Maarel) or other polysaccharides



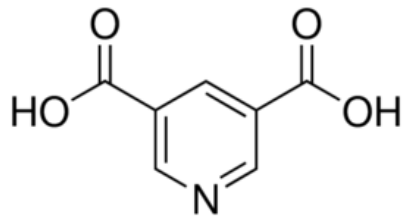
cross-linkable groups

available now / no PhD





Cationic polyester emulsions for wood coating applications



polyesters



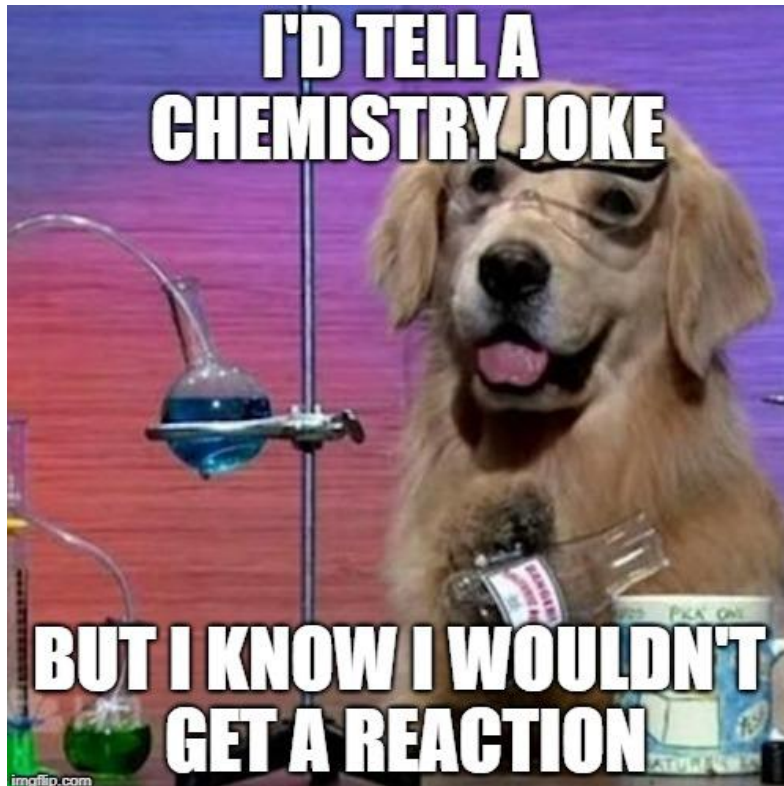
cationic PU dispersion

available now / no PhD





Summarizing



- make polymers
- characterize polymers
- measure properties
- eat
- (get drunk)
- sleep
- repeat