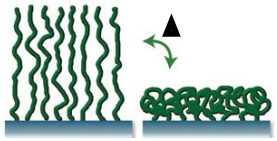
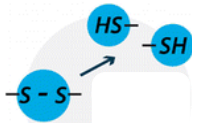
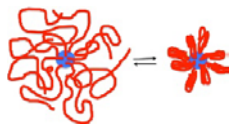
Stimuli responsive materials

Polymer which undergoes physical, chemical or conformational changes in response to external stimuli



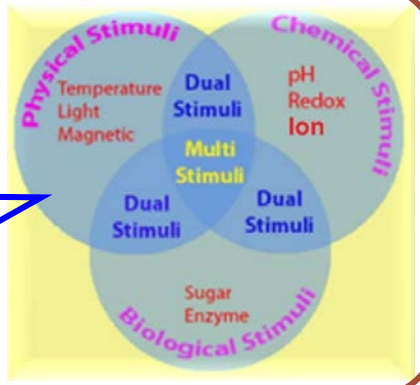


Chemical



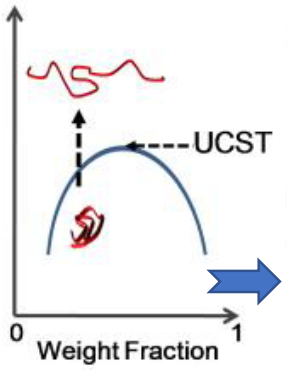
Conformational

Stimuli

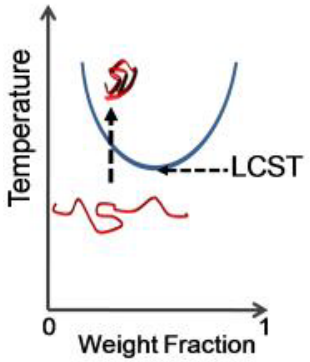


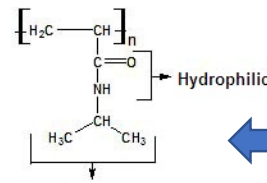
Thermo-responsive

UCST-Type

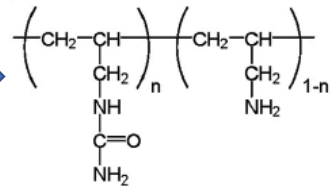


LCST-Type



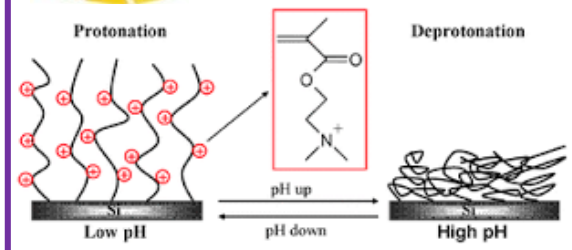


Poly(N-isopropyl acrylamide)

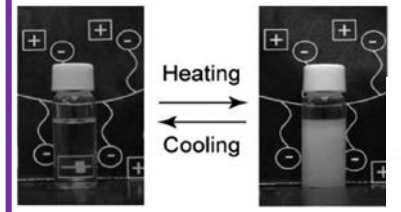


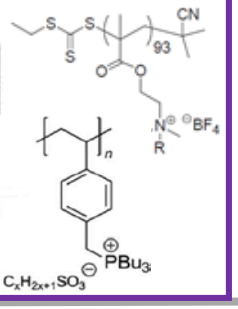
poly(allylamine)-*co*-poly(allylurea)

pH-responsive

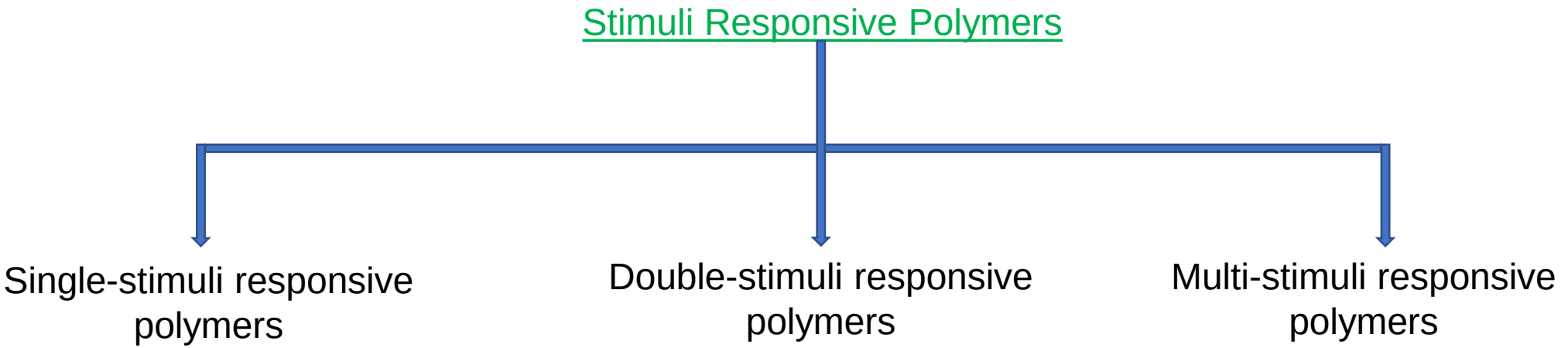


Salt-responsive





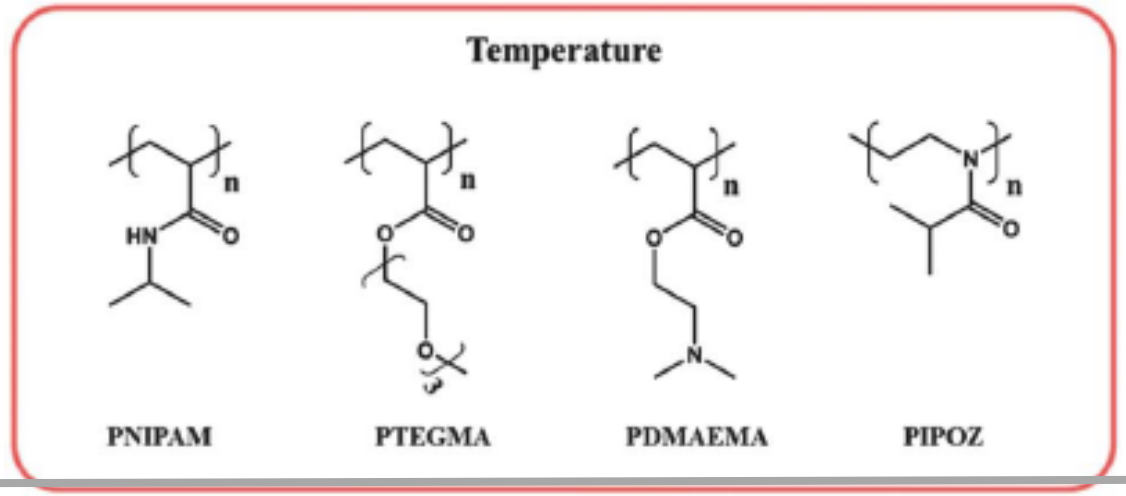
Stimuli responsive polymers



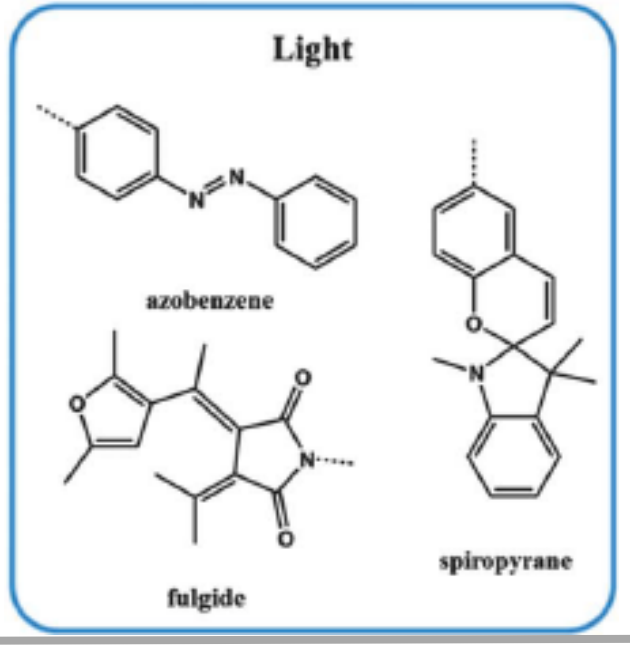
Singly stimuli responsive polymers

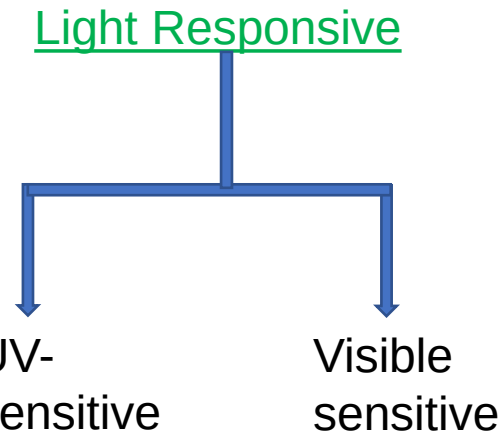
1. Temperature Responsive
2. Light Responsive
3. Redox-activity Responsive
4. pH Responsive
5. Chemo-Responsive

1. Temperature Responsive Polymers



2. Light Responsive

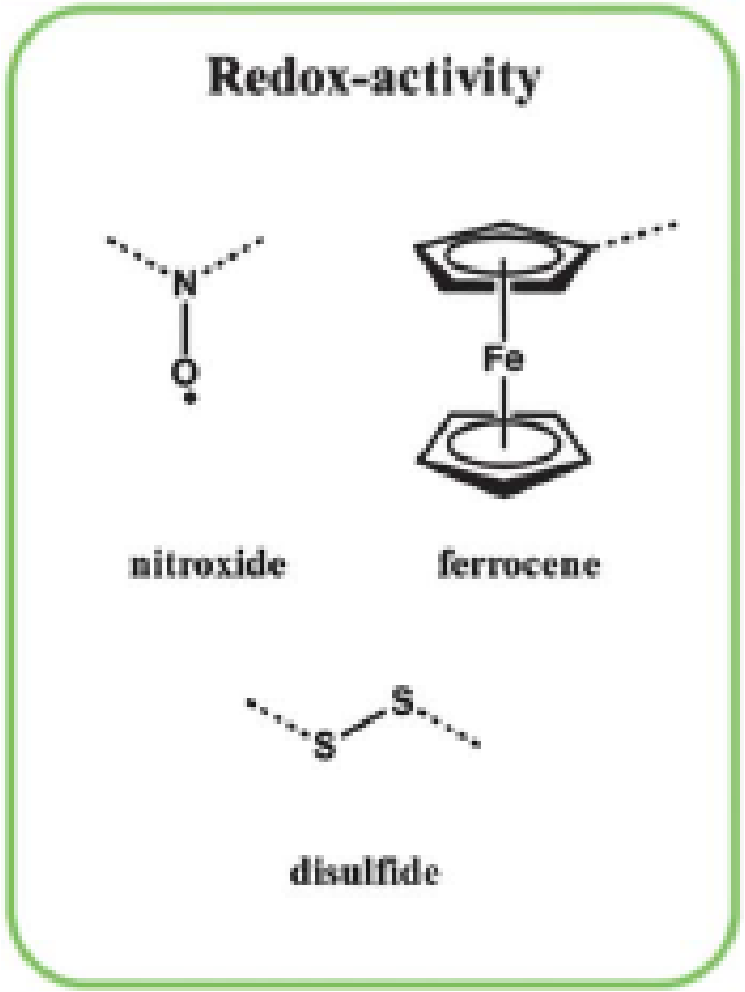




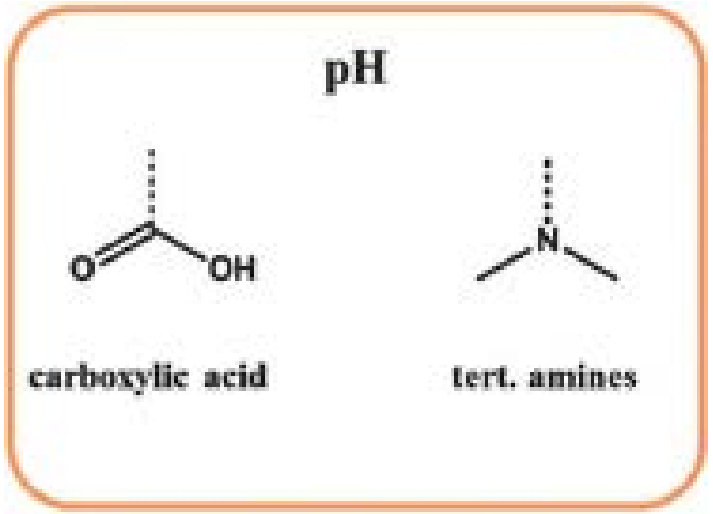
Ref: Schattling et.al *Polym. Chem.*, **2014**, *5*, 25–36

Single stimuli responsive polymers

3. Redox-activity Responsive



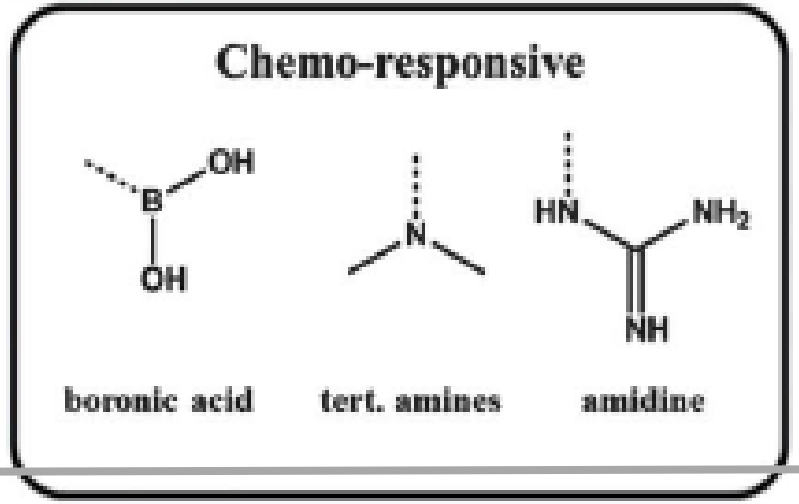
4. pH Responsive



Example of pH Responsive Polymers

1. Poly(acrylic acid) (PAAc)
2. Poly(methacrylic acid) (PMAAc)

5. Chemo-Responsive



Sensitive upon chemical changes in the environment.

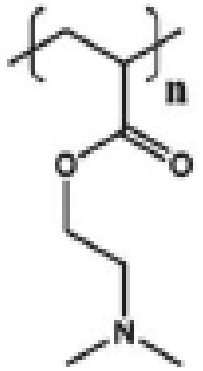
Ref: Schattling et.al *Polym. Chem.*, **2014**, *5*, 25–36

Double stimuli responsive polymers

1. Thermo and pH-responsive polymers
2. Thermo and light-responsive polymers
3. Thermo and redox-responsive polymers

1. Thermo and pH-responsive polymers

Example:- PDMAEMA



PDMAEMA

These materials attracted great attention in the field of drug delivery

Ref: Schattling et.al *Polym. Chem.*, **2014**, *5*, 25–36