



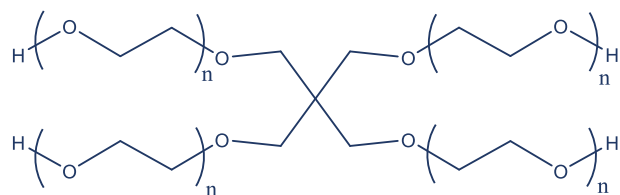
“Structure and diffusion in DDNs at the nano- to micro- scale”

Marie Skłodowska Curie ITN-DoDyNet
Double dynamics for design of new responsive polymer networks and gels

Paola Nicolella (ESR 10)

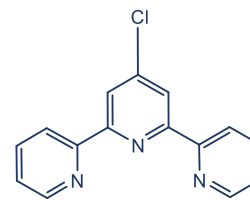
Last time

Synthesis

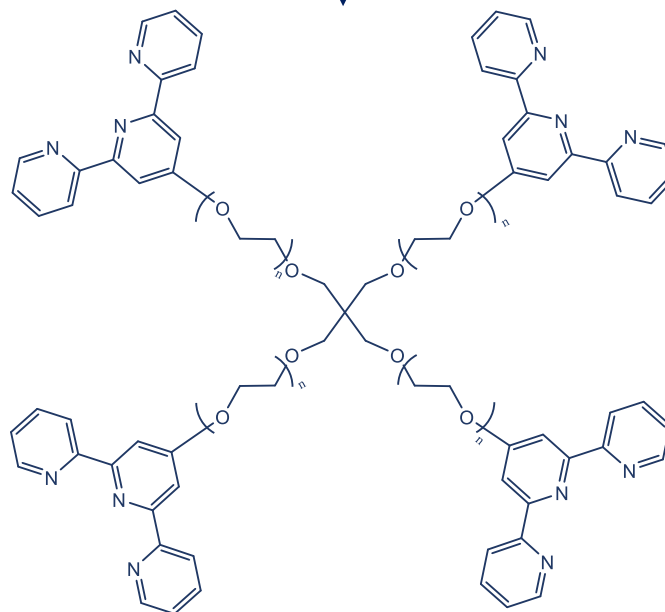
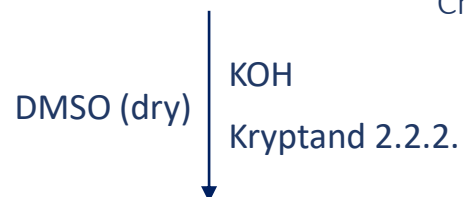


4-arm Poly ethylene glycol (PEG)

+

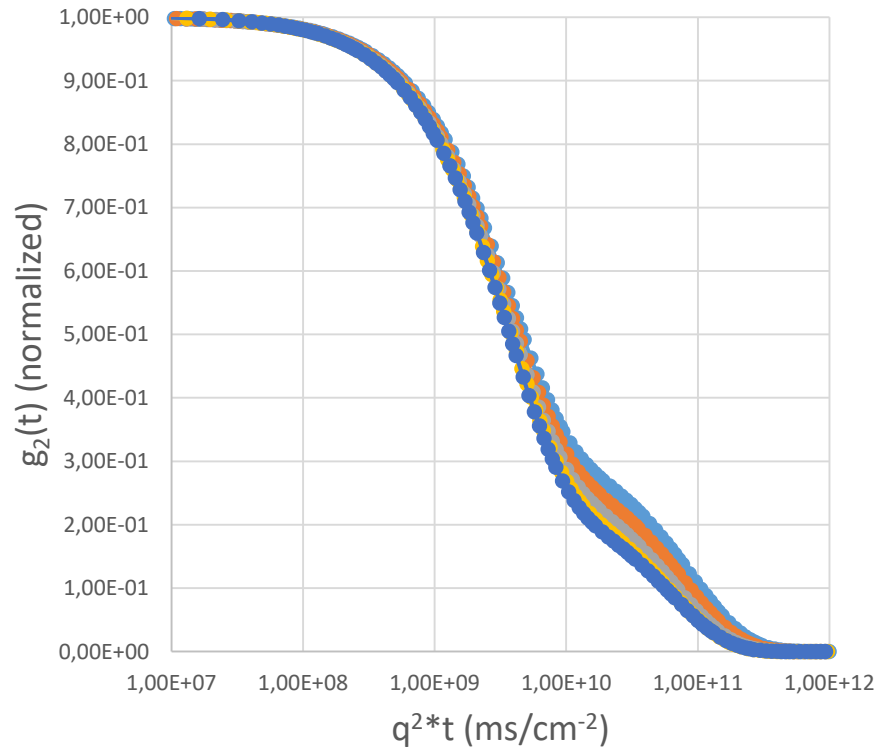


Chloro terpyridine



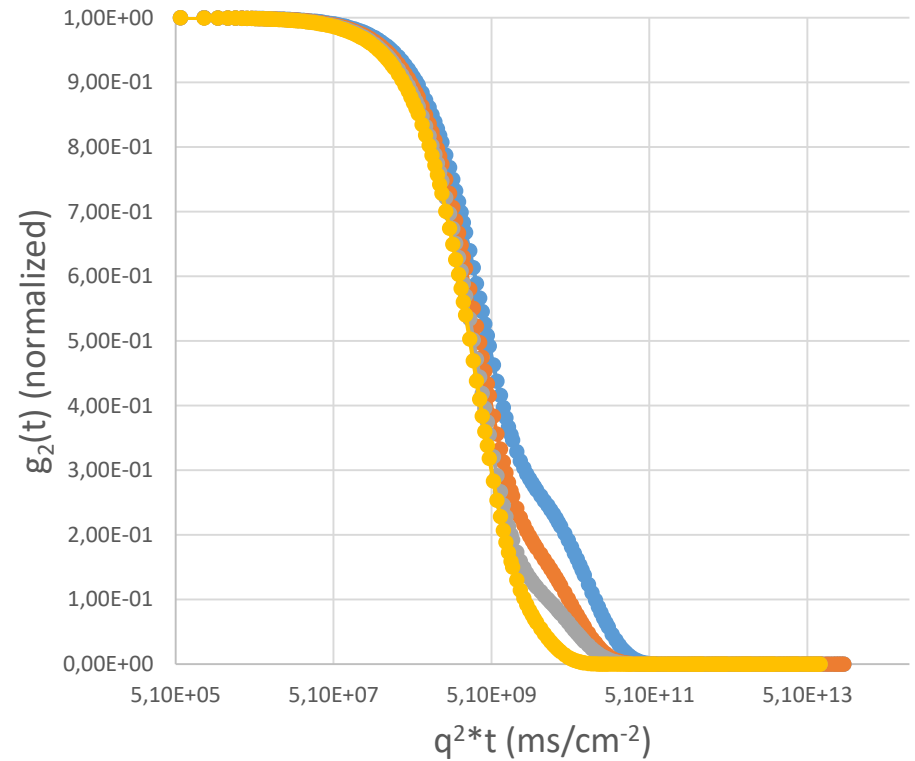
Results

Peg-Tpy-450nm filter @ different angles

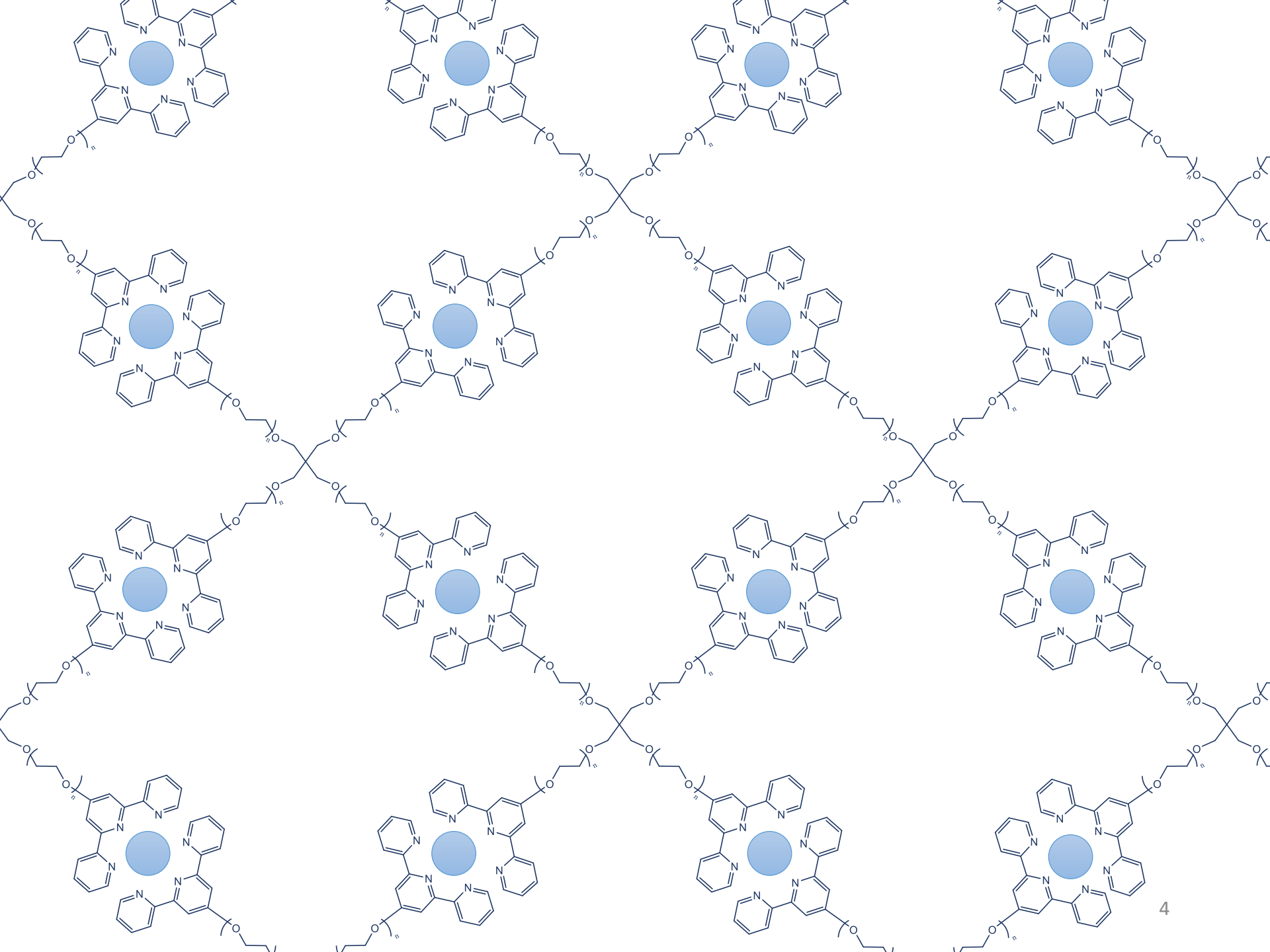


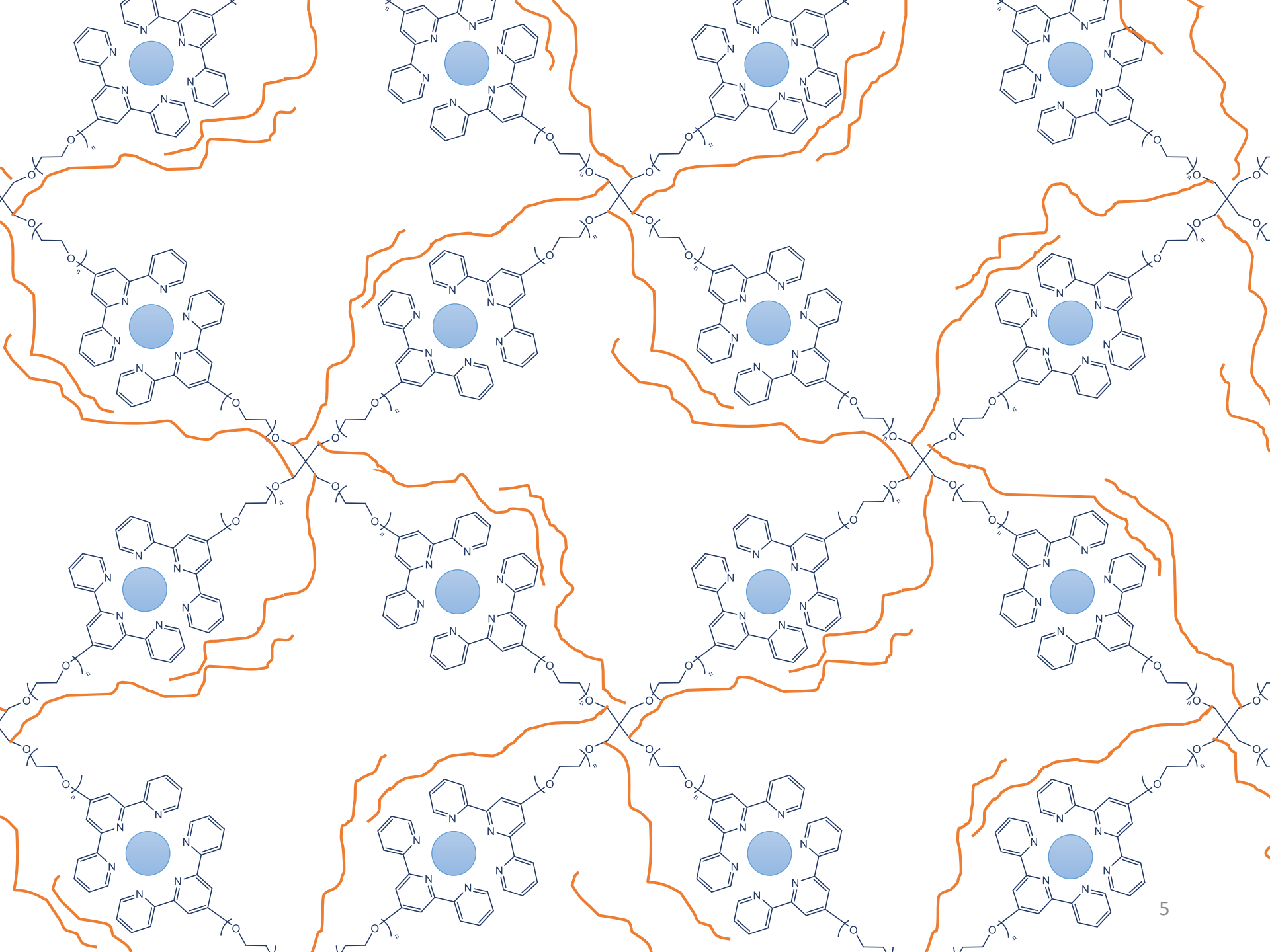
- PGTPM000 - 30°
- PGTPM003 - 60°
- PGTPM006 - 90°
- PGTPM009 - 120°
- PGTPM012 - 150°

Peg-Tpy-30°



- 450nm
- 200nm
- 100nm
- 20nm





“Structure and diffusion in DDNs at the nano- to micro- scale”

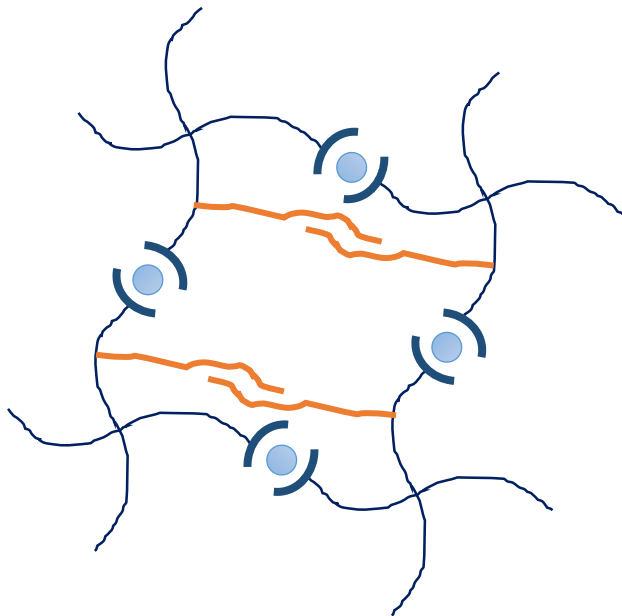
Marie Skłodowska Curie ITN-DoDyNet

Double dynamics for design of new responsive polymer networks and gels

Synthesis of a Double Dynamic Network with thermoresponsive polymer and metal ion complex

Paola Nicolella (ESR 10)

Double Dynamic Network



Peg stars



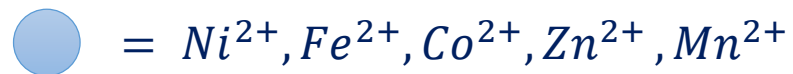
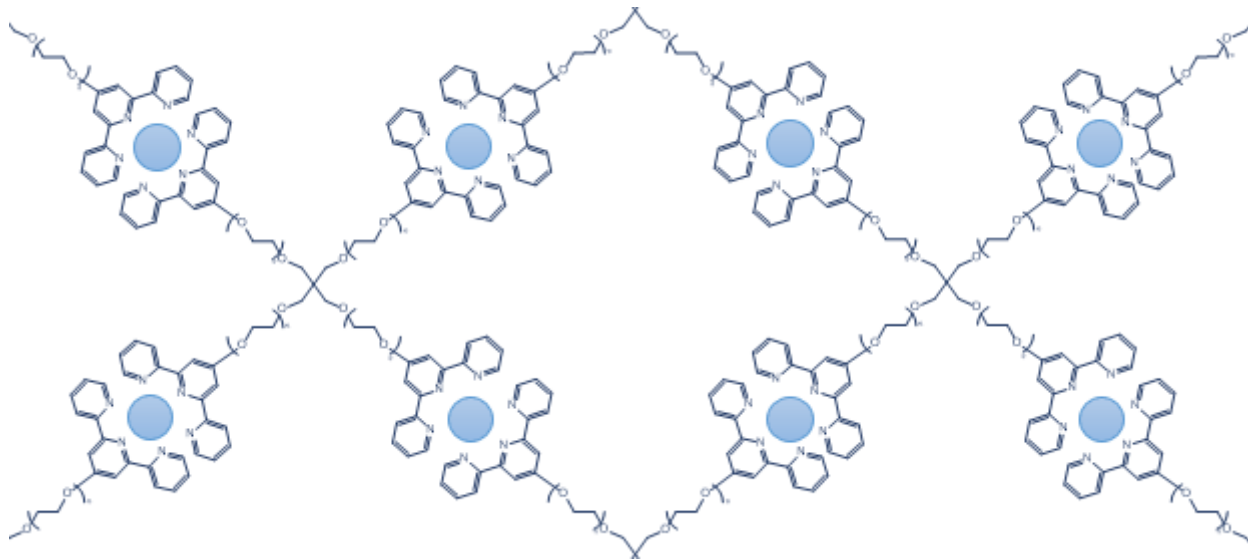
Terpyridine metal ion complex



Thermoresponsive polymer

First dynamicity

Metal-ion complex with Terpyridine



Second dynamicity

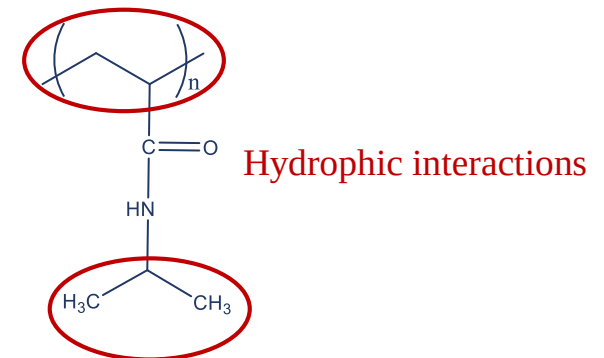
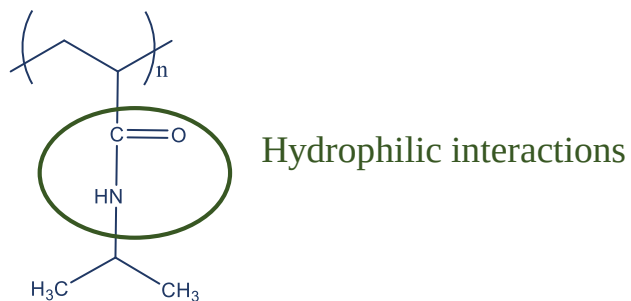
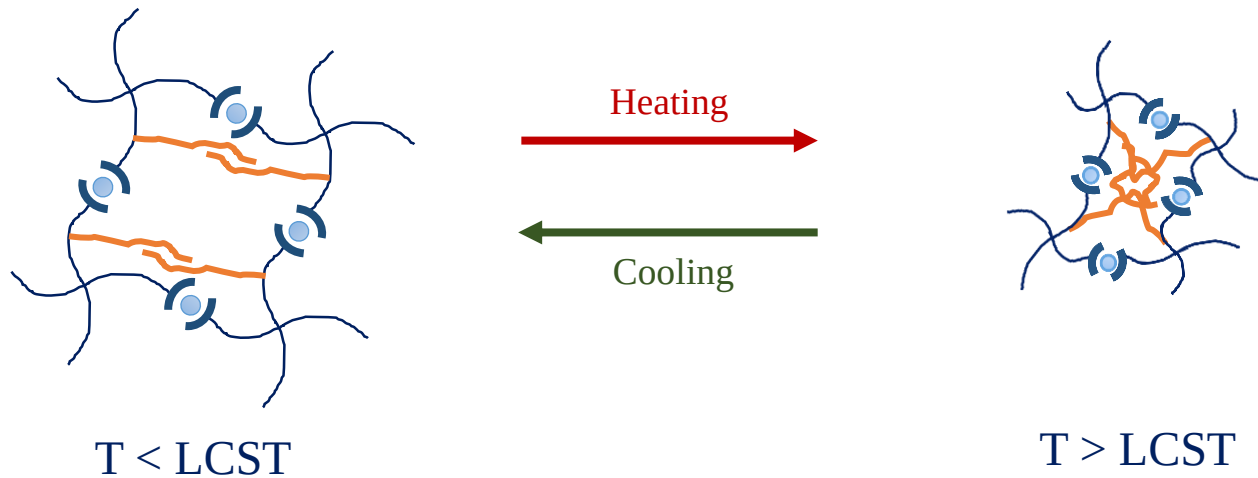
Poly (N-isopropylacrylamide) (PNIPAM)

- Thermoresponsive Polymer

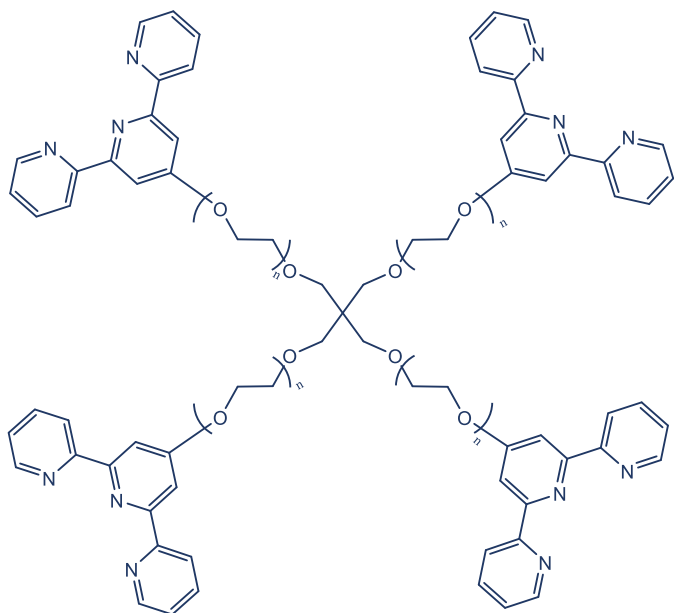


Thermoresponsivity of PNIPAM

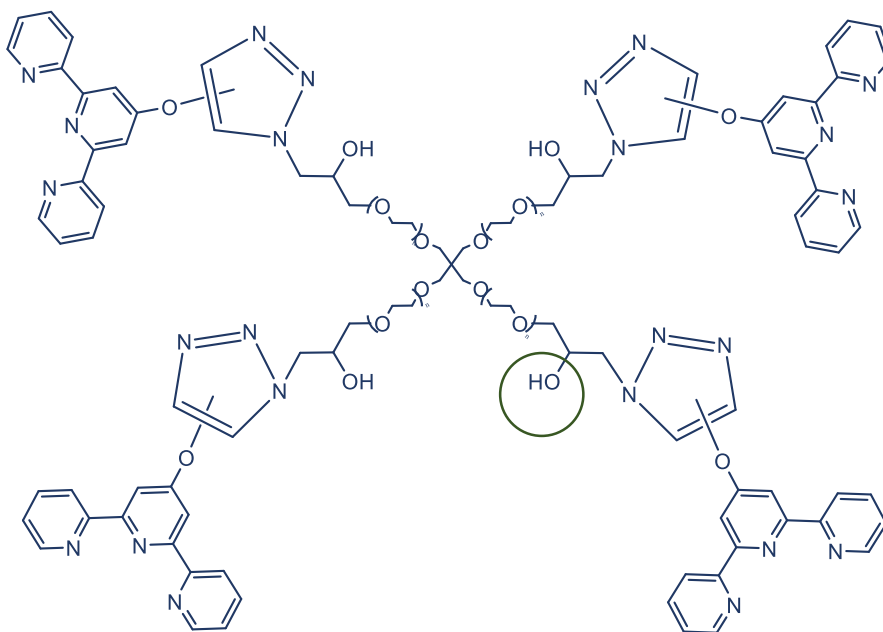
Lower critical solution temperature (LCST) = 30-33°C



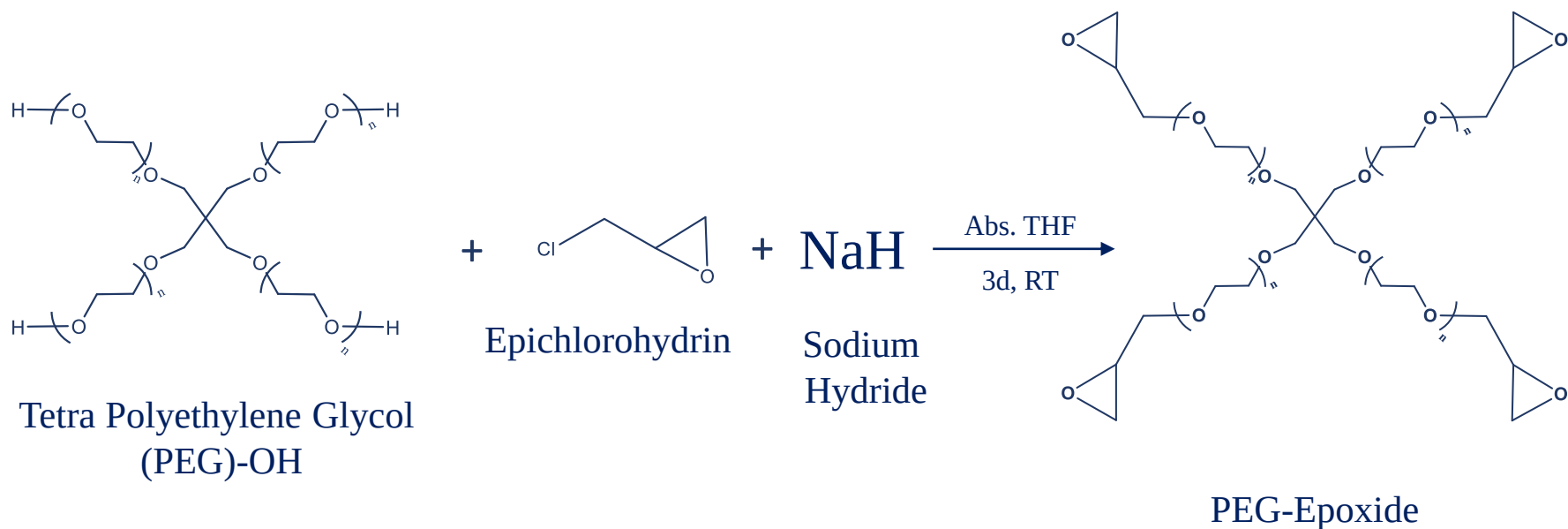
OLD



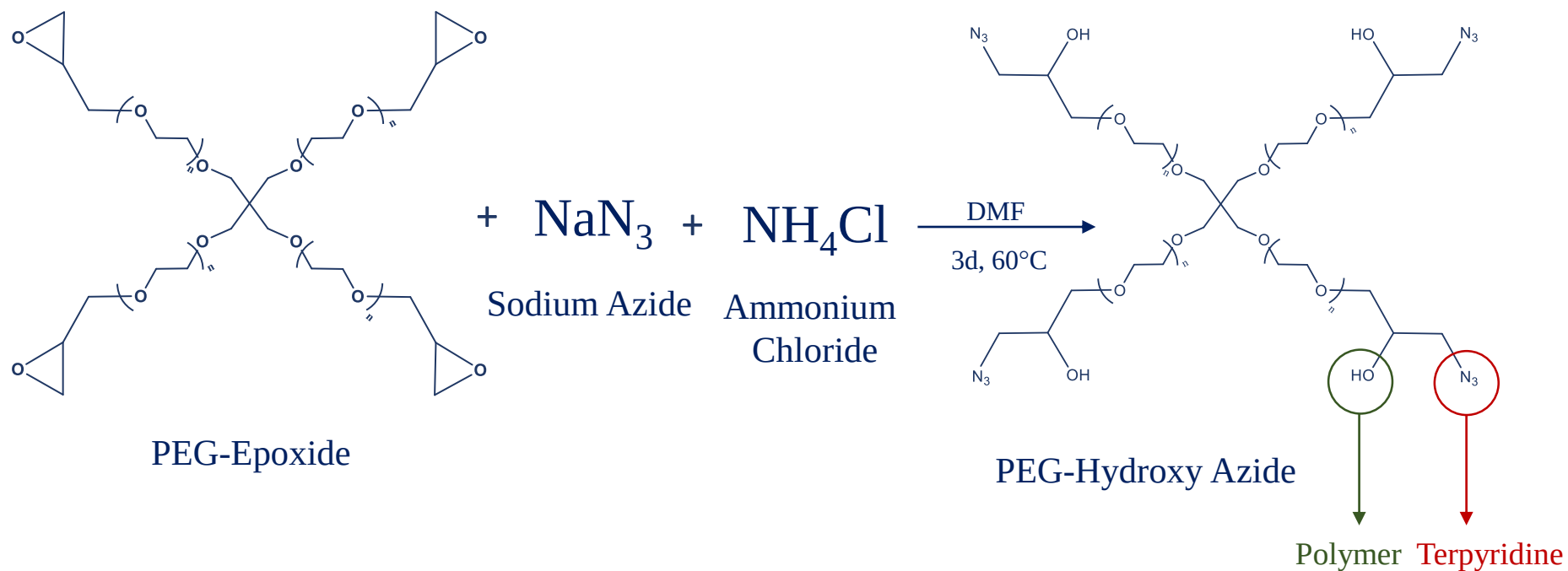
NEW



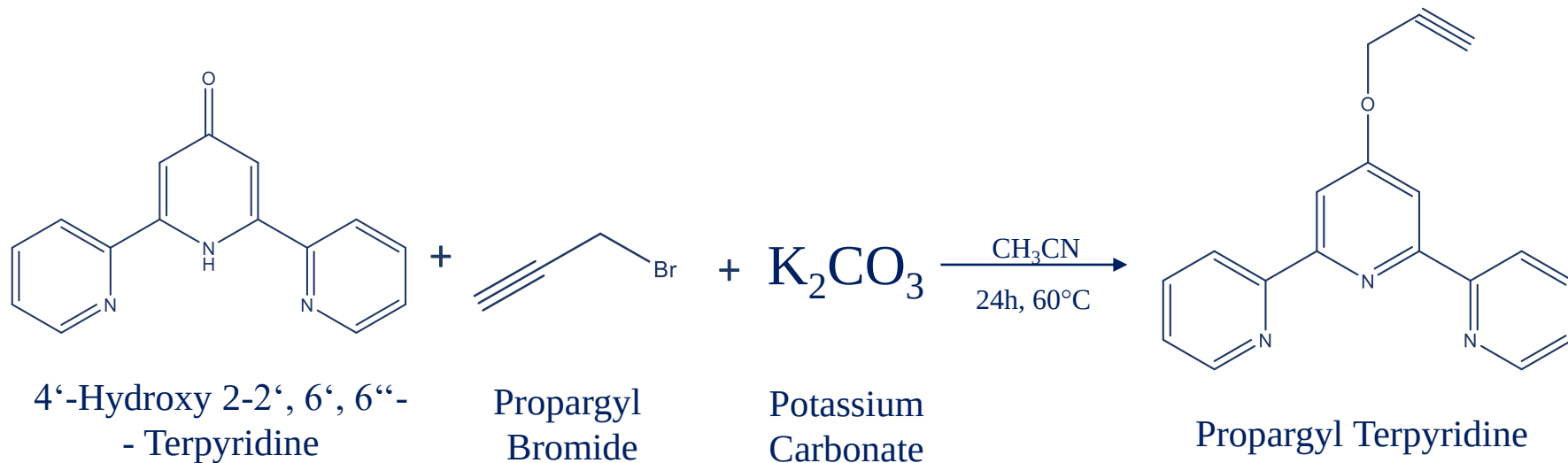
Synthesis PEG-Epoxyde



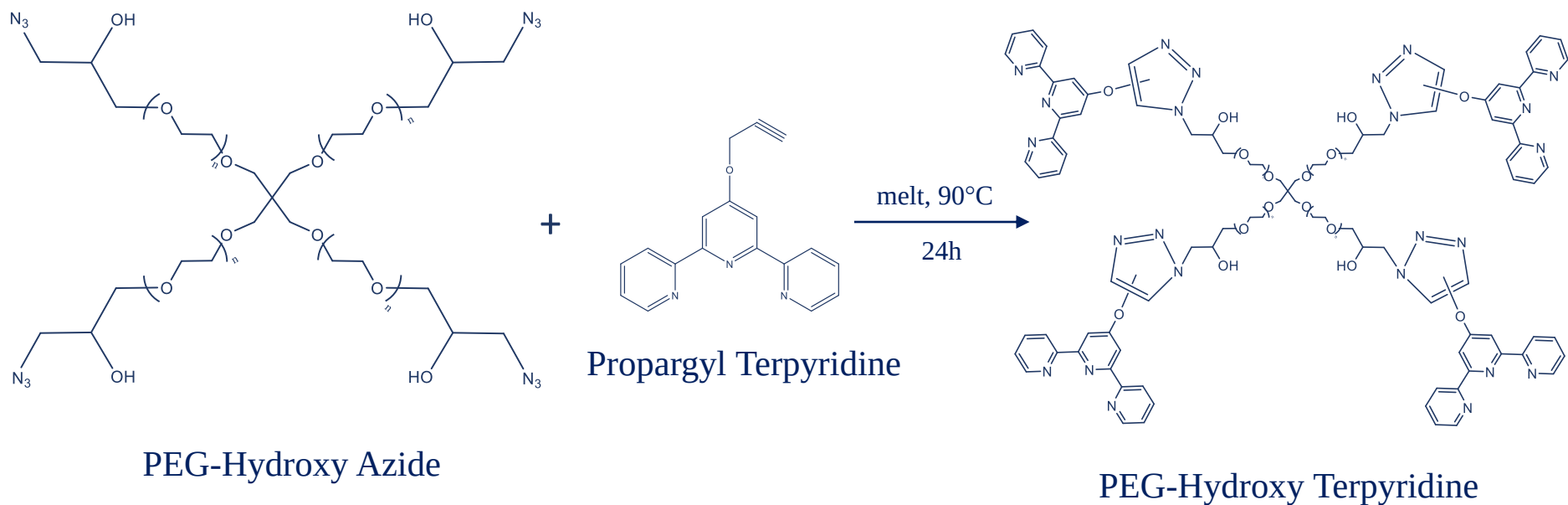
Synthesis PEG-Hydroxy Azide



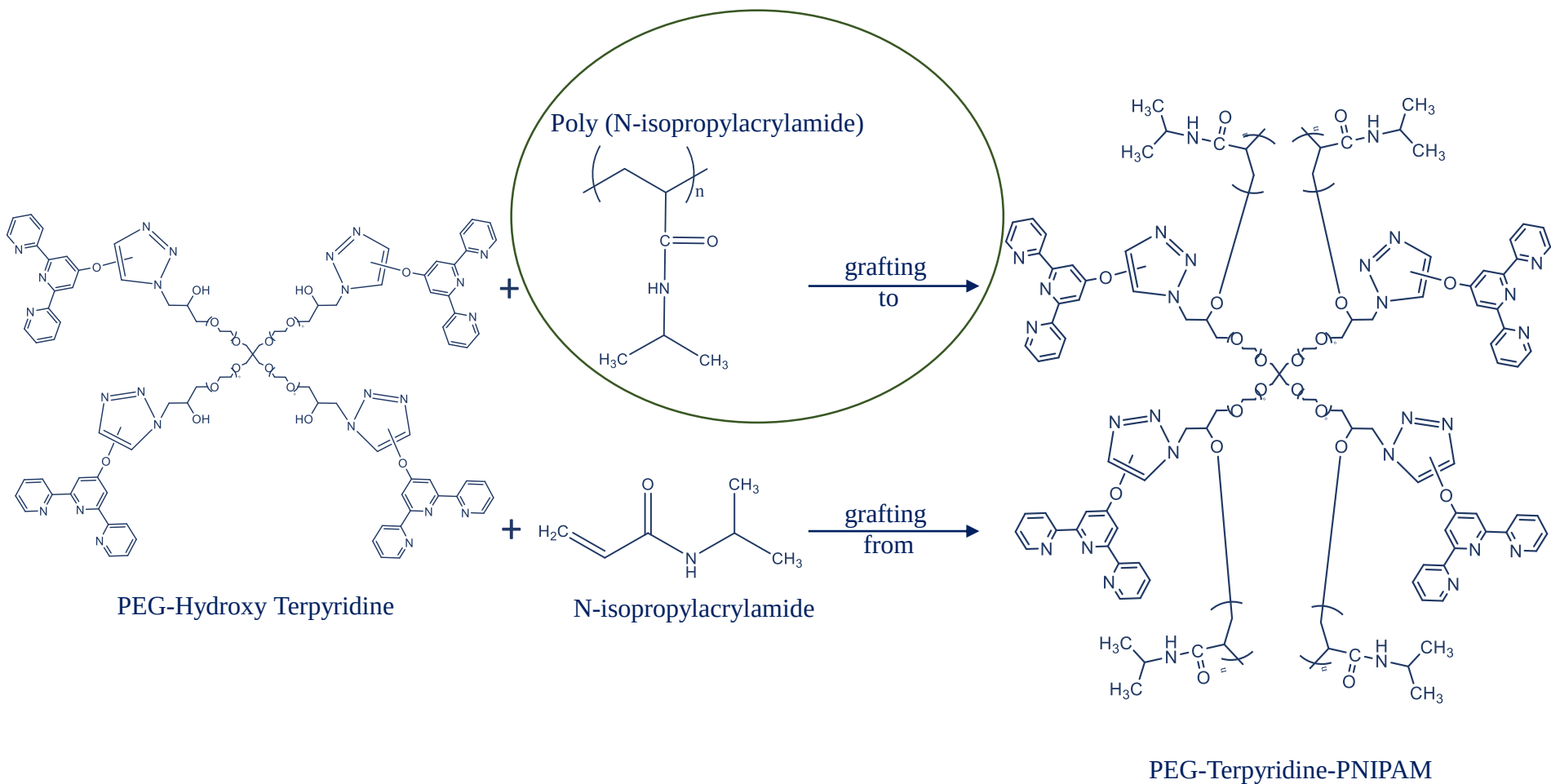
Synthesis Propargyl Terpyridine



Synthesis PEG-hydroxy Terpyridine



Addition of PNIPAM



Future plans

- Synthesis of PNIPAM
- Attachment of PNIPAM
- Characterization of the system
- Characterization of thermoplastic elastomers (Larissa Hammer – ESPCI)
- Tutorial review about light scattering and probe diffusion techniques

Thank you for your attention

Questions?

Suggestions?