Deutsche Physikerinnentagung 2022

Investigation of structural and dynamical properties of thermoresponsive polymers

Benedetta Petra Rosi

Forschungszentrum Jülich

Karlsruhe 24-27 November 2022

JÜLICH Forschungszentrum

Timeline

2014-2017

Rome «La Sapienza» University

2017-2022

Perugia University

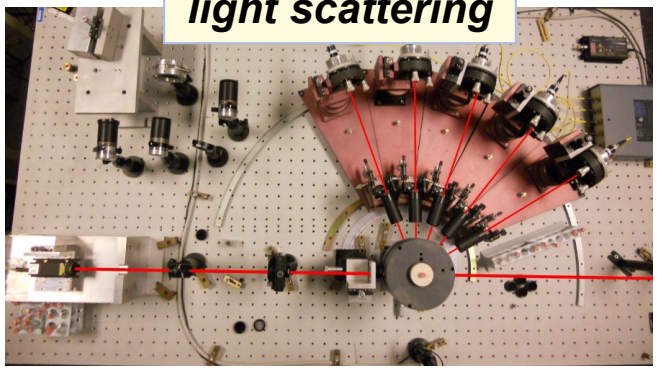
2022 – ongoing

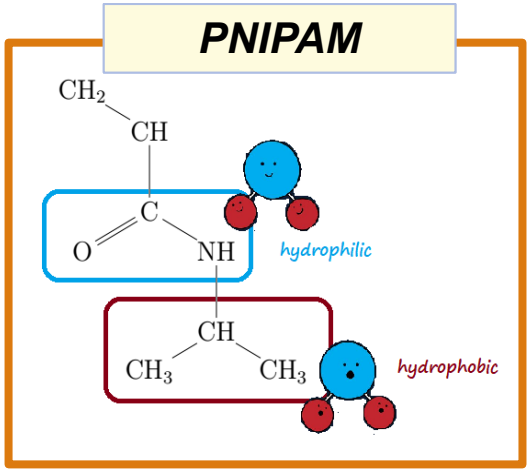
Forschungszentrum Jülich

Rome “Sapienza” University (2014-2017)

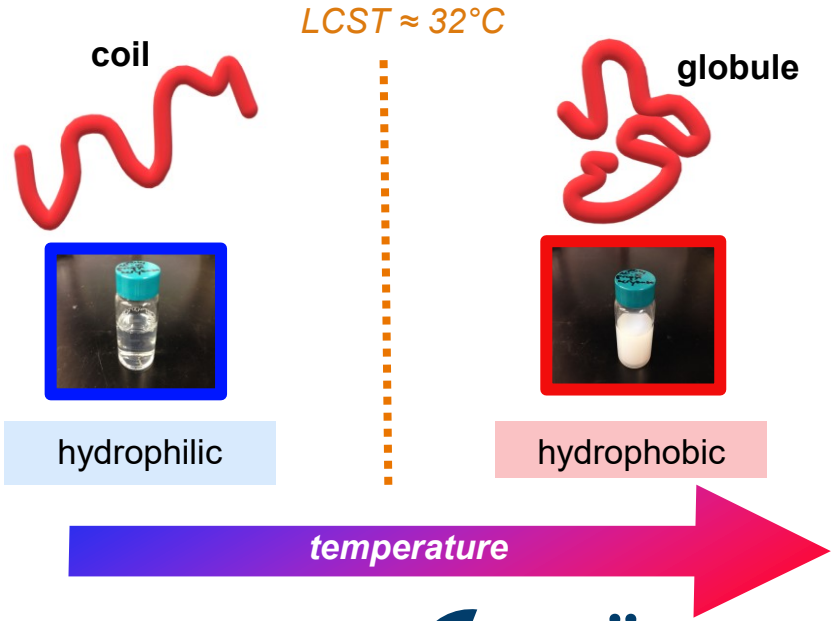
MSc

Soft matter – thermoresponsive polymers (PNIPAM)





amphiphilic monomer



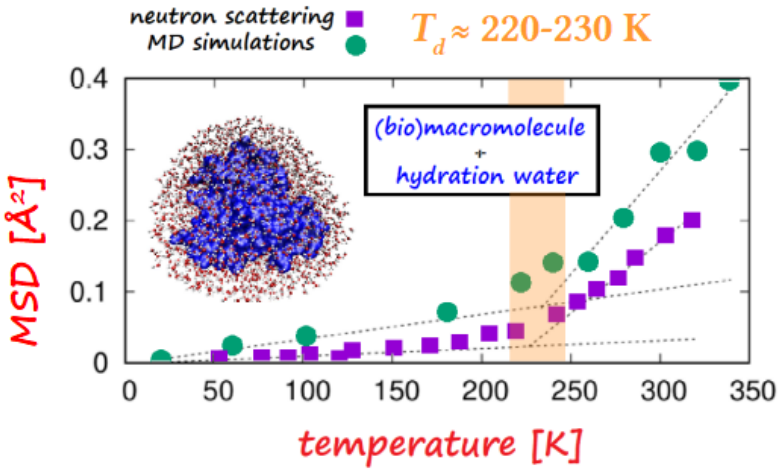
Perugia University (2017-2022)

PhD

Thermoresponsive polymers (PNIPAM)
→ **biomimicry**

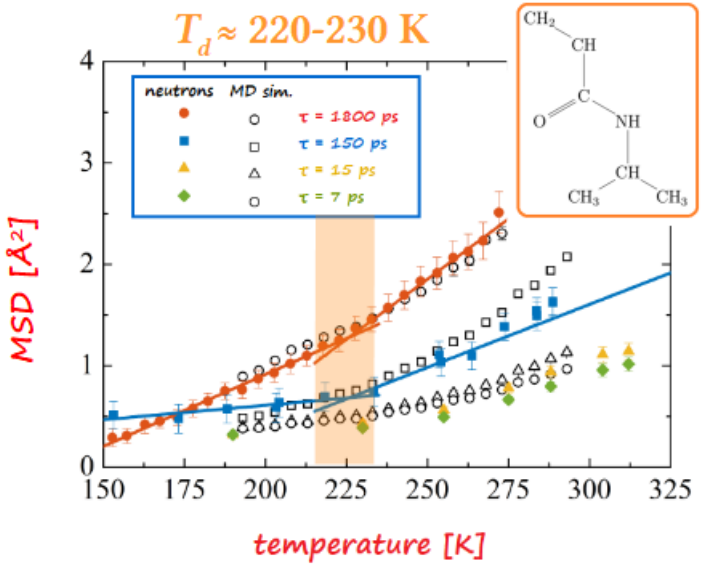
Fast, local motions → **neutron scattering**

protein



Giorgio Schirò and Martin Weik 2019 *J. Phys.: Condens. Matter* **31** 463002

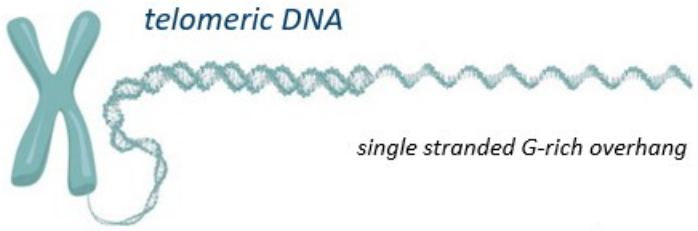
PNIPAM

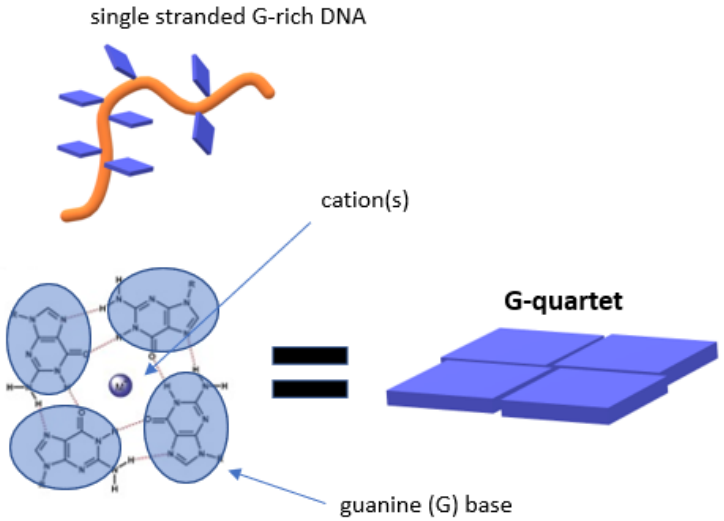


Perugia University (2017-2022)

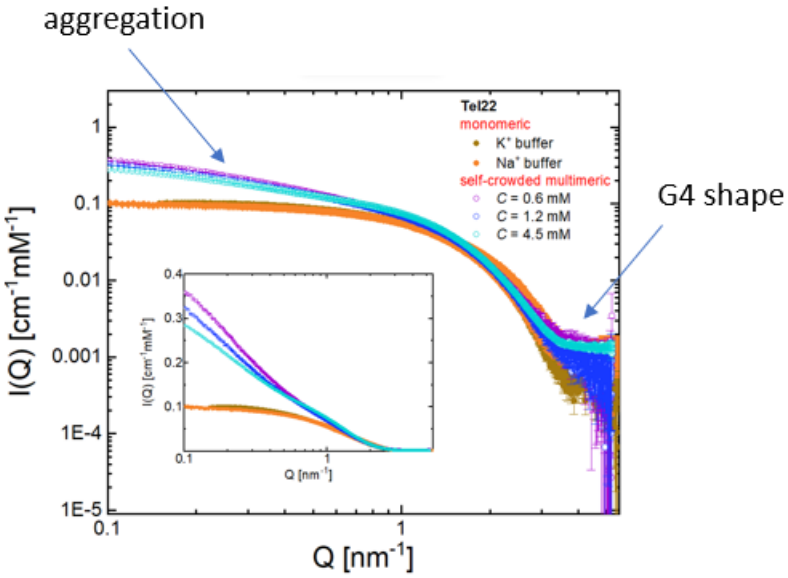
Postdoc

G-quadruplex DNA

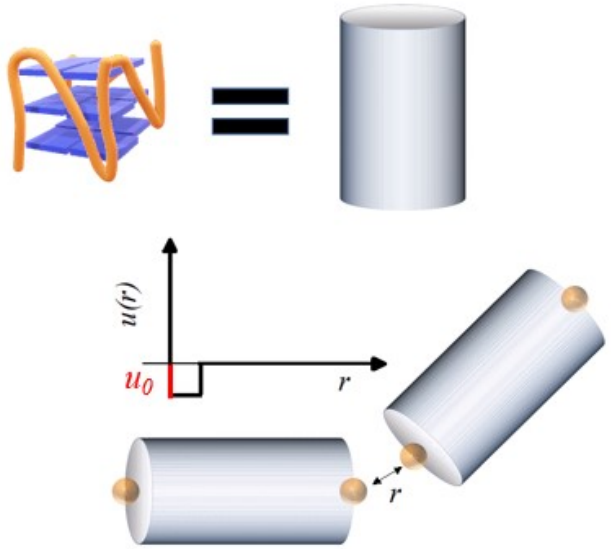




small angle X-ray scattering



MC simulations



Neutron scattering

JCSN Laboratory Course – Neutron Scattering

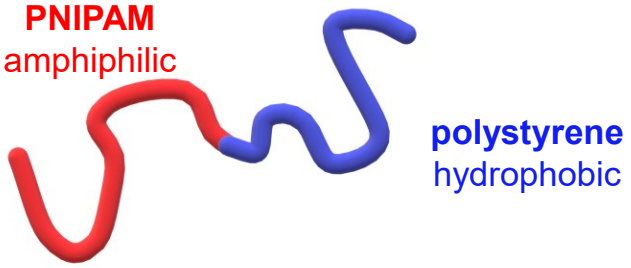
- *FZJ, Jülich*
- *MLZ, Garching (Munich)*

2-weeks of theoretical and practical lectures

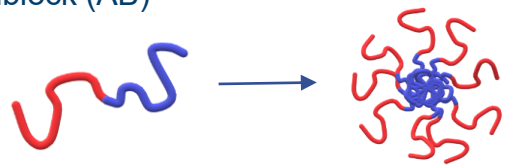
Forschungszentrum Jülich (2022-ongoing)

Postdoc

Thermoresponsive **block copolymers**



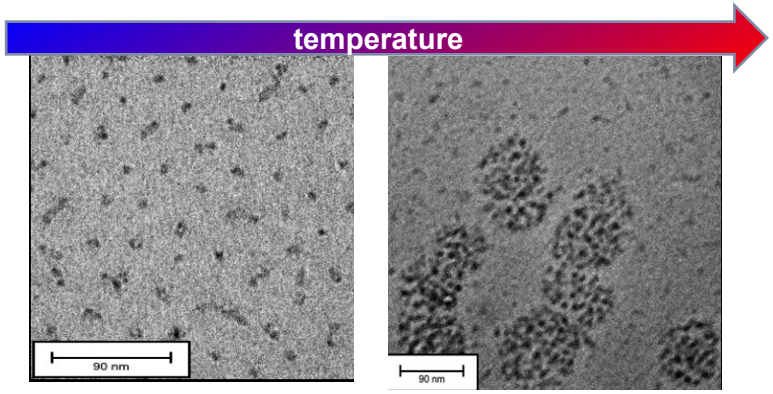
1) diblock (AB)



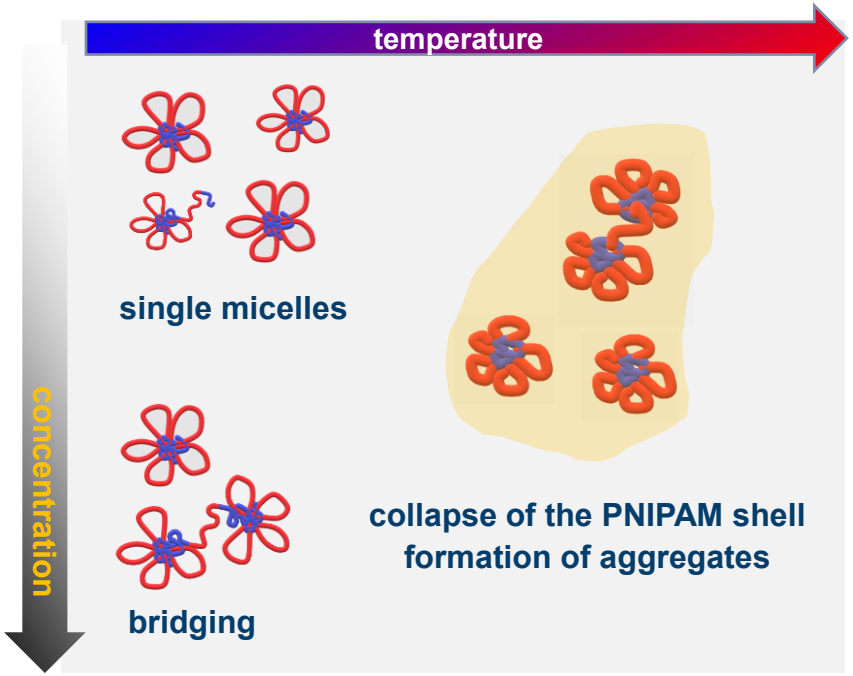
star-like micelle

2) triblock (ABA)

flower-like micelle



single micelles micelle aggregates



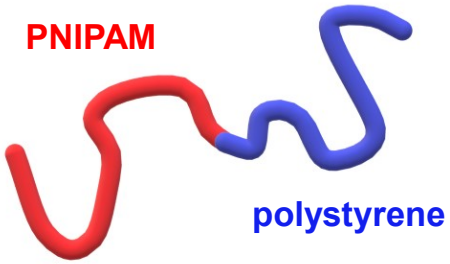
J. Michalska-Walkowiak *et al.*, Adv. Mat. 2022

Forschungszentrum Jülich (2022-ongoing)

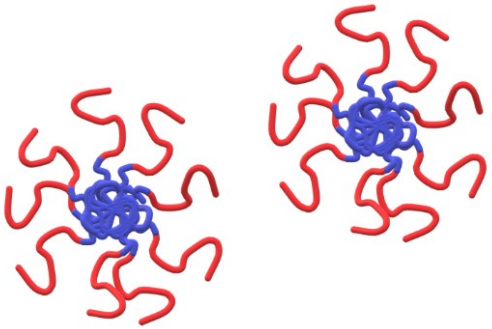
Postdoc

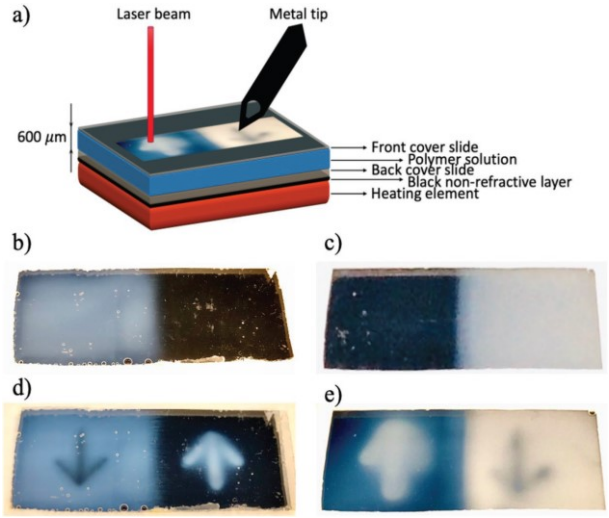
Thermoresponsive **block copolymers**

PS-PNIPAM diblocks



→ form t**hermo-responsive micelles** in water





Joanna Michalska-Walkowiak, Beate Förster, Stephan Hauschild, Stephan Förster, Adv.Mater.2022, 34, 2108833

Forschungszentrum Jülich (2022-ongoing)

Postdoc

- **Research collaborations** (FZJ, MLZ)
- **Tutorial activities**

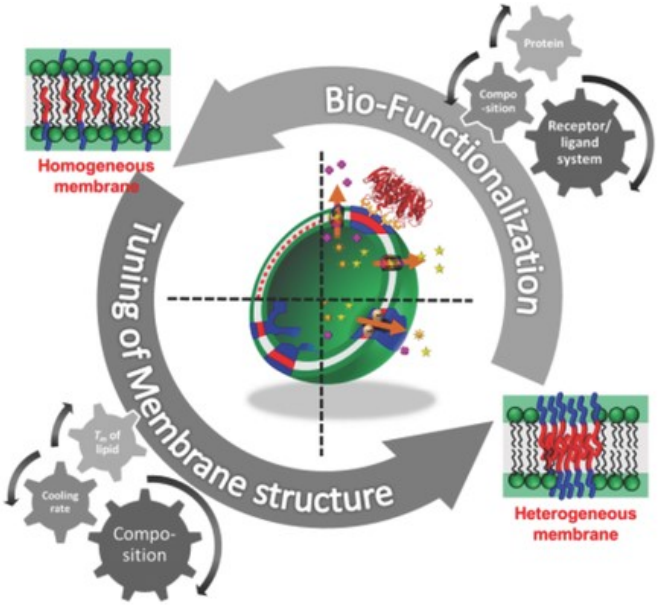
Forschungszentrum Jülich (2022-ongoing)

Future?

GNeuS programme (co-funded MSCA) for neutron scattering (deadline 18.01.2023)

Amphiphilic polymers + lipids → **hybrid membranes**

- *optimized drug delivery*
- *protein expression regulation*



Matthias Schulz, Wolfgan .H. Binder, *Macromol. Rapid Commun.* 2015, 36, 2031–2041

Thanks for your attention!