



Double Dynamics for design of new responsive polymer networks and gels

Modelling the linear dynamics of Double Dynamics Polymer Networks

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About me

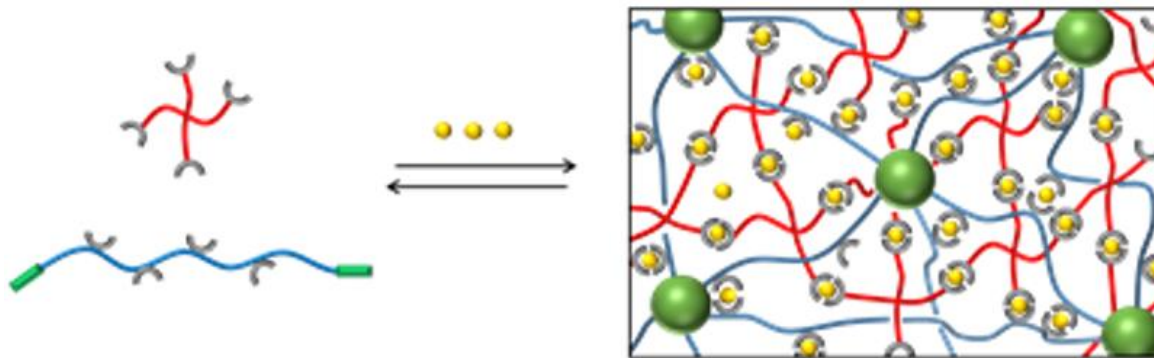


Welcome to China, Welcome to Xi'an



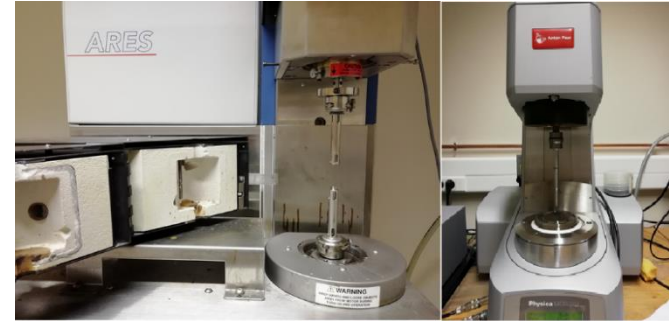
Understanding and modelling the linear dynamics of DDNs, so as to deepen and broaden the molecular understanding of the soft materials, which will benefit designing of novel materials for application.

- Tube models for describing the linear viscoelasticity (LVE) of DDNs, their main characteristics (composition and architecture of the building blocks, entanglement, type of interactions between the sub-networks, and lifetime of the interactions, etc) will be systematically varied to understand their influence on DDNs structure and dynamics.
- Study the viscoelastic properties of telechelic supramolecular entangled polymers governed by two different supramolecular dynamics(fast and slow) to understand the influence of statistical composition on the relaxation dynamics.
- Developing a model to determine the rheology of entangled sticky chains, and including the sticker dynamics in modelling.

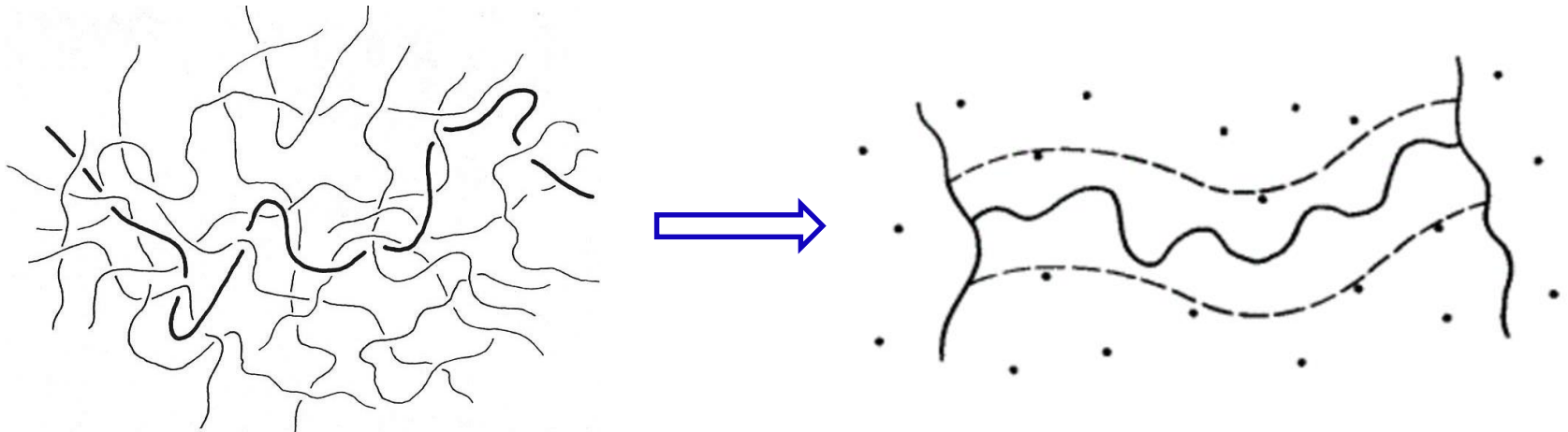


Methodology

- Based on rheological tests in linear region, which is performed on strain-controlled rheometer or stress-controlled rheometer.



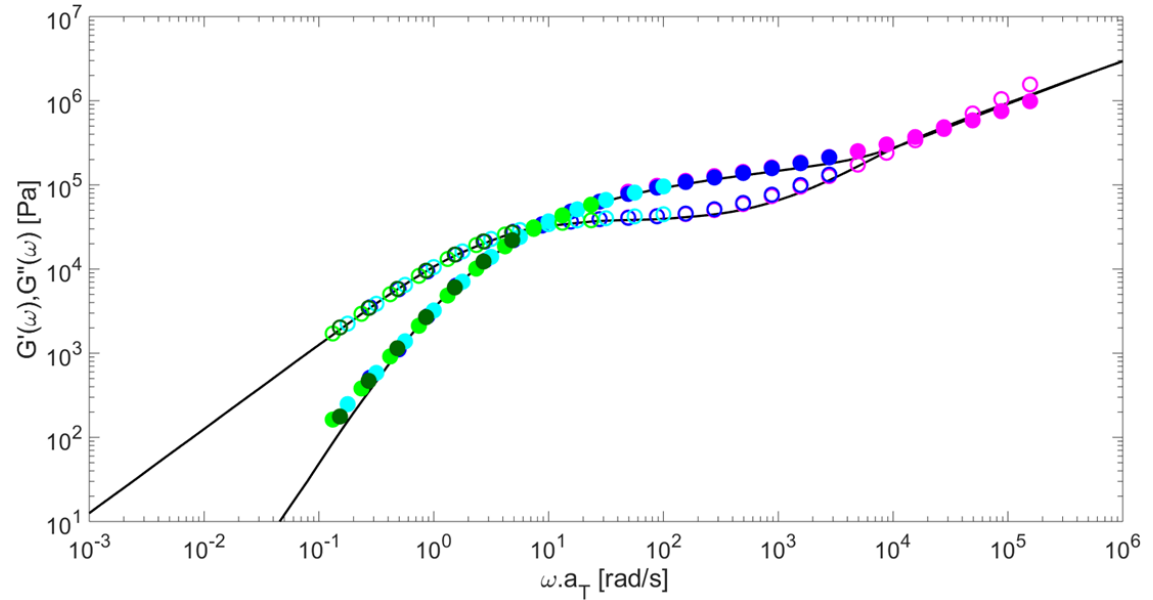
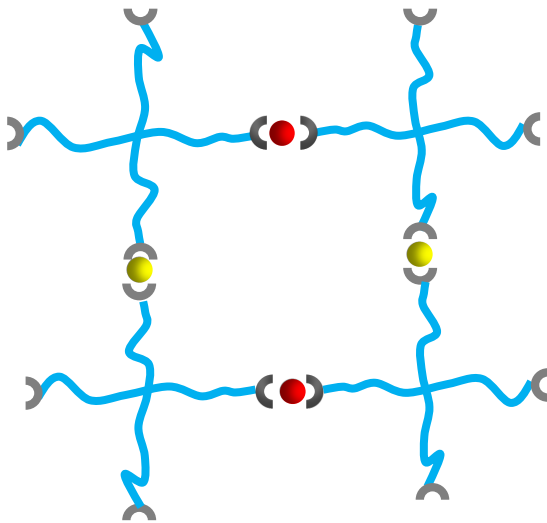
- The modelling part is based on the modified Tube model with the TMA (time marching algorithm) methods.



- Other techniques: DSC, WAXS, FSR, etc.

Achievements

- Obtained the influence of interaction of different ions nature on the relaxation dynamics of the associating system.
- Established the first model, which predicts well the linear viscoelastic properties, to describe the behavior of these associating systems.



Training

- Elementary Modules on double dynamics networks, FORTH, Crete, Greece, September 2018
- Industrial Workshop, and Advanced Modules of the ITN, DSM, The Netherlands, January 2019
- The advanced modules of the ITN, DTU, Denmark, May, 2019
- Rheology lectures, UCL, October-December, 2018
- Scientific Communication, UCL, February-April, 2019

Others



dissemination / communication / outreach activities / conference attendance / secondments



- Secondments, Allnex, M37-M39, Supervised by Dr. Patrice Roose
- Exchange to UM, Supervised by Prof. S. Seiffert
- Poster, Summer school on double dynamics networks, Italy, 2019
- The Workshop on “Polymers in fast flows”, Capri, Italy, July, 2019
- The 23rd edition of the Ph.D. Students' Day, UCL, 29 May 2019
- International Rheology Meetings



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Future career

Pursue Post-doc
Work in industry
Non-academic job
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Thanks for Dodynet!