



What we learned (1)

- Polymers
 - branched, star polymers (McLeish, Briels)
 - interface in polymer blend (Orihara, Takahashi)
 - polyelectrolyte solution (Colby, Kumar)
 - micro-phase separation in BCP (Takahashi)
 - composite gel (Shibayama)
- Surfactants
 - worm-like micelle (Kumar, Briels)
 - shear-induced onion (Kato, Fujii)
 - foam (Cohen-Addad)



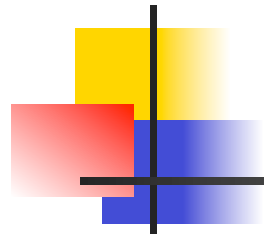
What we learned (2)

- Liquid crystals
 - lamellar, hexagonal phases (Komura, Ramos)
- Superconductors
 - vortex lattice (Maeda)
- Emulsions
 - macro-emulsion, droplet (Kawaguchi, Weeks)
- Colloids, glasses, amorphous
 - suspension of spheres and rods (Pine, Weeks)
 - granular system (Hatano)



Structural rheology

- Rheology of **uniform** system
 - Doi, Edwards (1978) → McLeish
- Rheology of **non-uniform** system
 - deformation, flow, destruction of meso-structures
 - non-equilibrium soft matter
 - “structural rheology” (correct English?)
- “Non-uniform” = “Structure”



“Structures”

- Molecular architecture
- Periodic lattice
- Interface (blend, mixture)
- Entanglement
- Defects (dislocation, grain boundary)
- Self-assembled objects
- Concentration fluctuations
- Dynamic heterogeneities



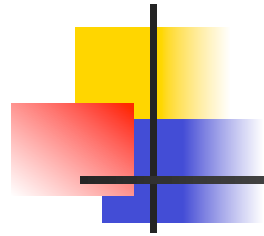
Priority area in Japan

- “Non-equilibrium soft matter physics: Structure and dynamics of mesoscopic systems”
 - Supported by Ministry of Education, Culture, Sports, Science and Technology of Japan.
 - Head investigator: **Takao Ohta** (Kyoto)
 - Project term: 2006 ~ 2010
 - 45 groups, 98 people
 - <http://softmatter.jp/>
- Original project name:
“Topological Rheology”



Discussions

- Soft glassy materials
- Yield stress fluids
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Acknowledgement

- All the contributors
- M. Onuki
- M. Kubo
- M. Matsushita
- A. Kameda
- M. Takeda
- Y. Nomoto