Probing spatial heterogeneity in supercooled glycerol and temporal heterogeneity with single-molecule FRET in polyprolines

Xia, T.

Stellingen

behorende bij het proefschrift

Probing spatial heterogeneity in supercooled glycerol and temporal heterogeneity with single-molecule FRET in polyprolines

1. Supercooled liquids can behave like yield-stress solids at temperatures well above the glass transition.
   Chapter 2
   Zondervan et al., Proc. Natl. Acad. Sci. USA ***105*** *(2008) 4993–4998.*

2. The thermal history is crucial for the onset of solidification in supercooled glycerol.
   Chapter 3

3. Fluorescent probes can be used to image spatial heterogeneity in a thin film of glycerol.
   Chapter 4
   Xia et al., J. Phys. Chem. B ***113*** *(2009) 15724–15729.*

4. The proposed temperature-cycle microscopy combined with optical probing methods can be used to study fast molecular dynamics at the single-molecule level.
   Chapter 6

5. Accurate determination of the center of single photoswitchable emitter has led to "superresolution" or resolution far better than the diffraction limit in fluorescence imaging.
Moerner, Proc. Natl. Acad. Sci. USA ***104*** *(2007) 12596–12602.*

6. Chromophores whose spontaneous emissions are dominated by their fast non-radiative decay can be detectable by using stimulated emission, which competes effectively with the non-radiative decay.
Min et al., Nature ***461*** *(2009) 1105–1109.*

7. Non-blinking and -bleaching properties of nano-gold particles have made themselves promising labels in biological applications.

8. The stoichiometry of the GFP-tagged type-II receptor can be quantified in live cells by characterizing the fluorescence intensities and the bleaching steps of the labels.
Zhang et al., Proc. Natl. Acad. Sci. USA ***106*** *(2009) 15679–15683.*

9. Reducing global meat consumption would reduce greenhouse gas emissions and cut the costs of climate policy substantially.
Stehfest et al., Climatic Change ***95*** *(2009) 83–102.*

Ted Xia
Leiden, 25 maart 2010