

Simulering av kontaktmekanikken for hydrogels

Elias Nilsen Hvideberg

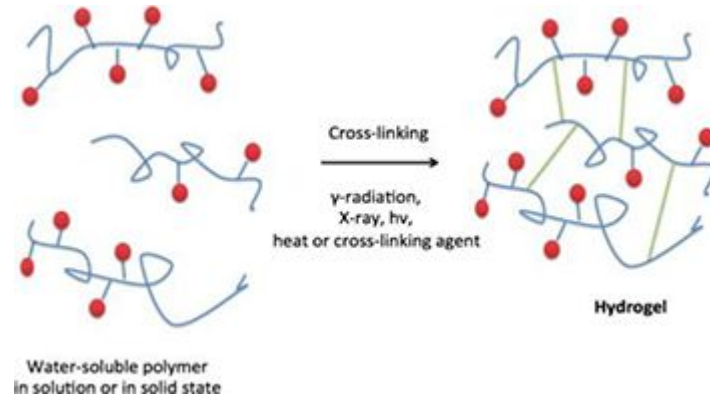
Veiledere:

Astrid de Wijn

Alex Hansen

Hva er hydrogels?

- Hydrofile polymerer
- Eksempler på bruk:
 - Smøremiddel
 - Kontaktlinser
 - Syntetisk vev



Bi, X., Liang A., "In Situ-Forming Cross-linking Hydrogel Systems: Chemistry and Biomedical Applications", DOI: 10.5772/63954

Hvilke egenskaper er interessante?

- Inntrykning
- Skjær
- Forskjellige løsninger

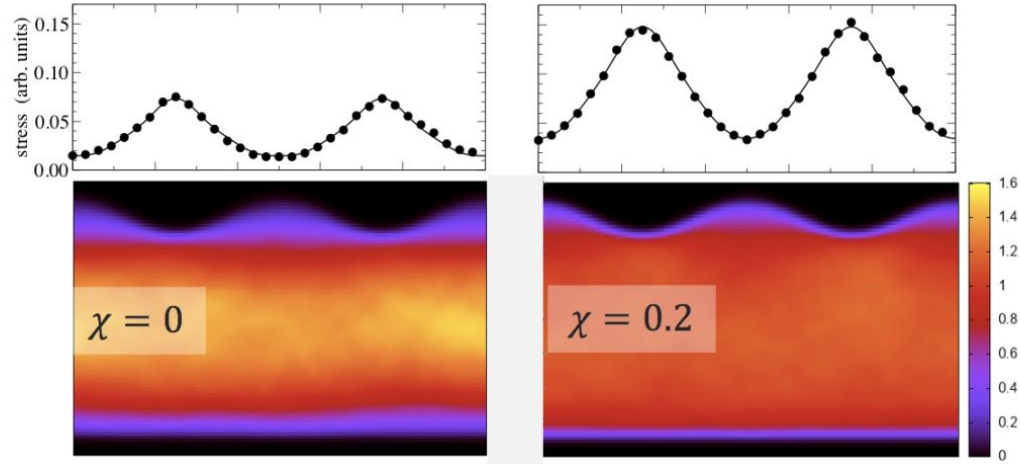


Figure 9. Stress profiles (**top**) and monomer concentrations (**bottom**) for a crosslinked hydrogel with a sinusoidal indenter being placed at the original mold height. Θ -solvent (**left**) and good-solvent (**right**) conditions are shown. The full lines in the stress profiles reflect a truncated Fourier series expansion.

Müser, M. "Modeling the Contact Mechanics of Hydrogels", *Lubricants* **2019**, 7(4), 35; <https://doi.org/10.3390/lubricants7040035>

Simulering

- Grovkornet molekylærdynamikk
- 2D-program av Dr. Martin Müser → 3D av Müser og meg
- Utfordringer:
 - Unngå selv-kryssing
 - Numerisk effektivitet