

Nematic and Cholesteric Elastomers with Locally Oblate Conformation

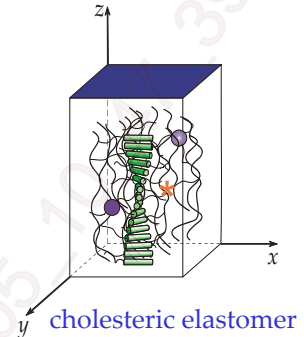
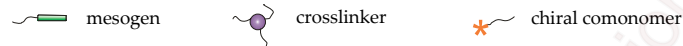
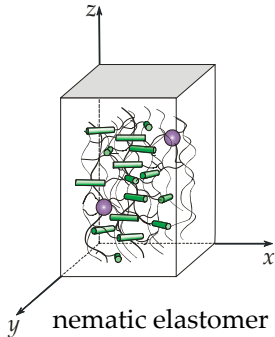


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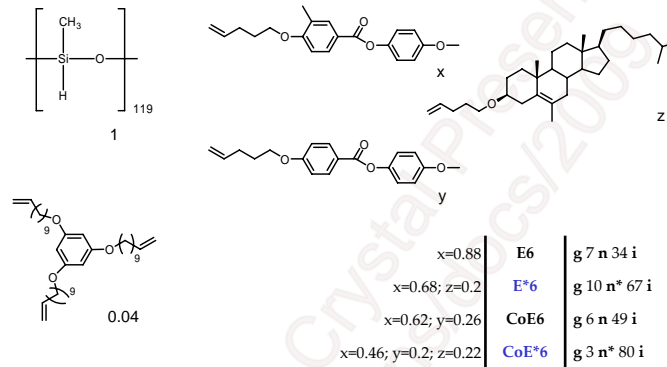
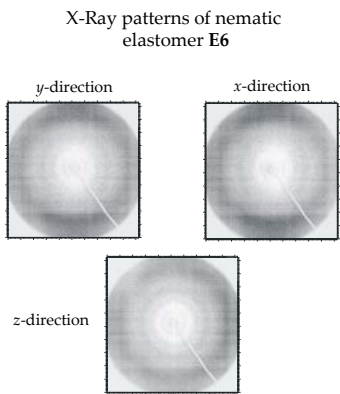
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Aims of the Work

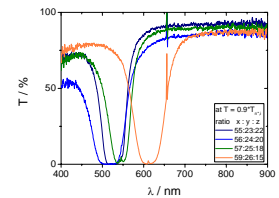
- to synthesize a nematic system with locally oblate chain conformation
- to obtain chiral nematic elastomers with their helix axis in the direction of the sample orientation
- to study the influence of the helicoidal supermolecular structure on the mechanical properties of the network



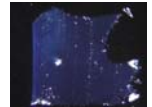
Synthesis and Characterization



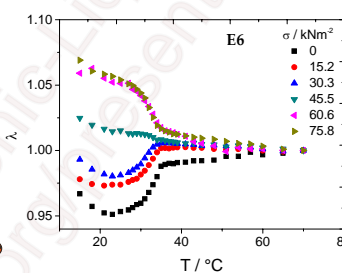
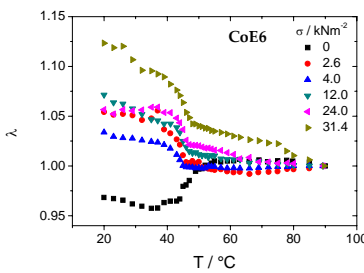
Transmission spectra of cholesteric linear polymers CoP*6 with different composition:



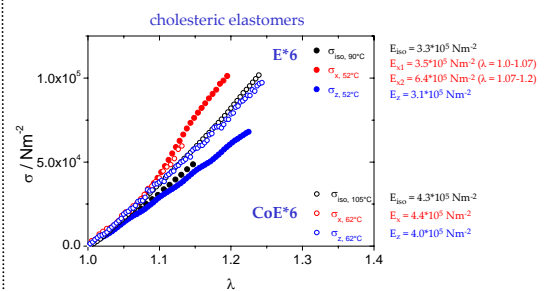
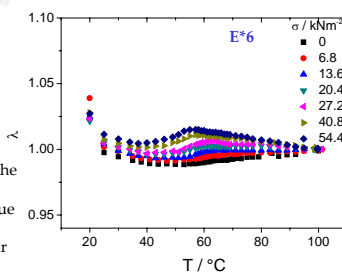
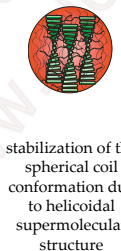
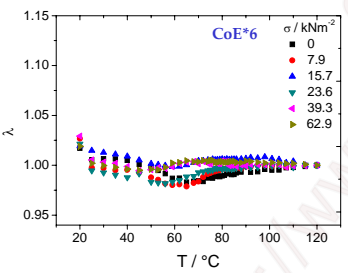
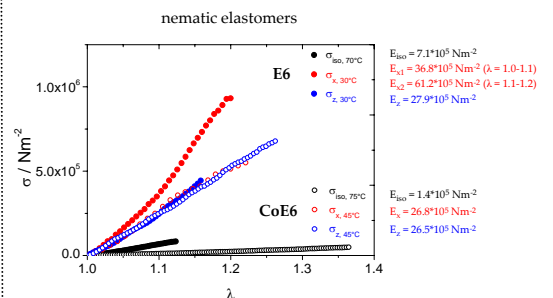
POM picture of cholesteric elastomer E*6



Thermoelastics: Coil Conformation



Stress-Strain Experiments



Conclusions

- cholesteric elastomers with the helix axis pointing in the direction of mechanical field were synthesized for the first time
- their mechanical properties were compared to those of nematic networks
- influence of the cholesteric helix on polymer coil conformation and mechanical properties of the network was shown

Outlook

- synthesis of elastomers: various amount of chiral comonomer → different pitch values → different coil conformations?