



## Predavanje

### Site-resolved NMR measurements of orientational order in side-chain liquid crystal elastomer

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Conventional side-chain nematic liquid crystal elastomers (LCEs) typically consist of at least three components: polymer backbone, cross-linker, and nematogen. Thermo-mechanical response of these systems can be tailored by selecting various non-mesogenic or mesogenic cross-linkers and co-monomers in various concentrations. It has recently been shown that chemical constitution and thermal preparation parameters play a crucial role in determining the thermodynamic character of LCE networks. Deuteron NMR studies so far have been unable to resolve among possible differences in the orientational ordering of individual LCE network components. Only recently, LCE networks exhibiting similar thermo-mechanical response and  $S$  vs.  $T$  profiles, yet with selectively deuteron-labeled cross-linker, co-monomer, and nematogen, respectively, have been synthesized. This provides for component-resolved deuteron quadrupole-perturbed NMR comparative determination of orientational order of the network's individual components, as well as for an insight into their reorientational dynamics. In accordance with recent observations in main-chain systems, the cross-linker and co-monomer molecules display a substantially lower degree of orientational order in comparison with the nematogenic side-chain moieties.

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