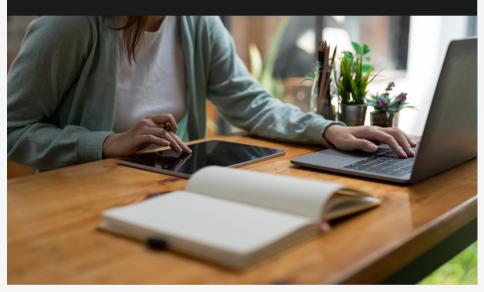
## MARIJANA ĐAKOVIĆ: Crystal chemistry

## Course content



Macromolecules: polymers, polyelectrolytes, polysaccharides, proteins, structural models, chain configuration; effect of structure and molar mass on physico-chemical properties of macromolecules. Electrostatic interactions in macromolecule solutions; problem of excluded volume, application of numerical simulation methods. Methods for molar mass determination; osmotic pressure, sedimentation, viscosity. Methods for particle size determination; light scattering, x-ray scattering, neutron scattering, microscopic methods. Polymers in solution; solubility, conformation, formation of polyelectrolyte complexes. Polymers on surface; polymer adsorption, kinetics of adsorption, polyelectrolyte multilayers, polyelectrolyte brushes.

1. Describe basic types of macromolecules (polymers, polyelectrolytes, polysacharides, proteins) and explain thier properties.

- 2. Explain and compare various methods for synthesis of polymers.
- 3. Name and explain the methods for determination of molar mass and size of macromolecules.
- 4. Derive the thermodynamic functions of state of mixing a polymer chain with solvents on the basis of the Flory theory and explain the problem of the excluded volume.
- 5. Describe and explain the properties of polyelectrolytes in solution.
- 6. Describe and explain the specificities of polyelectrolyte adsorption.

