

## **From sequence-defined macromolecules to coded materials.**

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### **Abstract**

The natural, perfectly sequence-defined macromolecules such as proteins and DNA for years have been an inspiration for polymer chemists. To this day, we are charmed by their spatial structures and the functions they can perform. Recently, the synthesis yielding polymers with precise monomer sequence has become a very important topic in modern polymer science. The polymer chemists reached for tools from other disciplines like organic chemistry or biochemistry and implied them to the classical approaches. The imported methodologies allowed the development of many new strategies leading to defined macromolecules, the essential examples of those will be presented. Moreover, the control over the assembly of defined polymer chains into functional materials using non-covalent synthesis approaches based on electrostatic and  $\pi$ - $\pi$  stacking interactions will be discussed. The application's potential of new macromolecular structures and materials will be illustrated on the example of data storage.