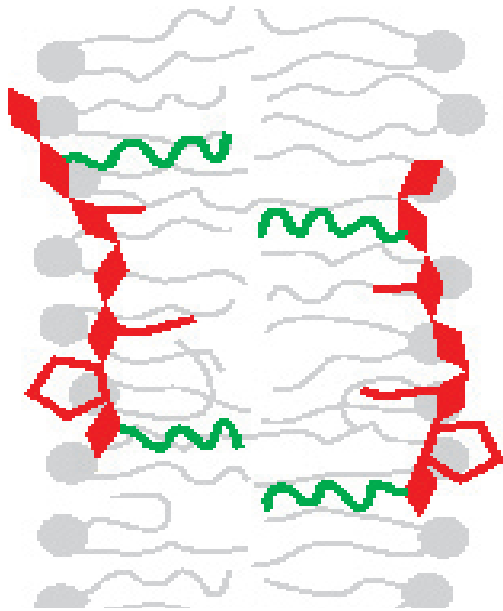


Keywords

- MAS-NMR
- Protein
- Membrane
- Polymer



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Solid-State NMR Studies of the Structure and Dynamics of Biological Materials

The junior research group is working on the structural and dynamical characterisation of biological membranes, membrane-associated molecules such as peptides and proteins and biological and artificial tissues. For these investigations, a large variety of solid-state NMR methods at highest magnetic field is employed. The goal of these studies is the general understanding of the basic properties of these materials or molecules and the development of applications for nano- and biotechnology as well as material science. Currently, the group is working on four research topics: First, the material properties of articular and tissue engineered cartilage are investigated. To this end, the dynamical properties and structural parameters of the macromolecules in cartilage are determined quantitatively. This methodology is applied to artificial cartilage tissue to provide a quality control/quality assurance of the tissue engineered cartilage. Second, lipophilic nucleosides are designed and applied to obtain highly functional membrane surfaces. Via base pair recognition, several structures such as enzymes, probes, or drugs can specifically bind to these highly functionalised surfaces to execute their specific function. Third, the structure and dynamics of membrane-associated peptides and proteins is investigated. The most important molecule studied is the human N-ras protein, for which the structure and dynamics of the lipid modified C-terminus is determined. Fourth, new solid-state NMR methods are developed in the group.

Selected References

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