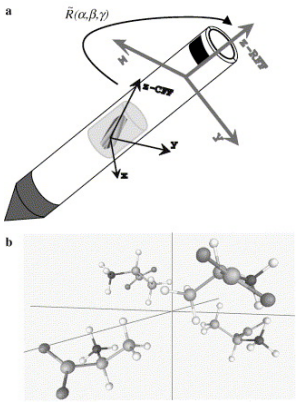

Most membrane-bound proteins are structurally uncharacterized at present; solid state Nuclear Magnetic Resonance (NMR) methods promise to offer important information for these systems. Recently we discovered that NMR spectra of uniformly labeled solid state proteins are well-resolved and may provide the basis for structural and functional studies. Many small proteins have been studied using state-of-the-art solid state NMR equipment.

For most enzymes and drug targets, ligand (a species that donates electrons through a coordinate covalent bond) binding is associated with the motion of a flexible loop, and the restructuring of hydrogen bonds and other contacts between proteins. The characteristic timescales of an active-site flexible loop is under investigation. NMR measurements in the active sites of enzymes give insight into catalytic mechanism, drug binding modes, and dynamics.

http://www.columbia.edu/cu/chemistry/fac-bios/mcdermott/faculty.html