Nuclear magnetic resonance is a non-invasive way to observe material properties on a molecular level. Magnetic resonance imaging is an important diagnostic tool in medicine. Molecules of several metabolites in muscle tissue show similar interactions as molecules partially oriented in orienting media. These interactions could provide new information about processes *in vivo*, this can serve for diagnostics of metabolism. New insight into the function is gained by observation of metabolites in orienting media. Observable anisotropic interactions in muscle tissue in vivo could be used for diagnostic purposes. Anisotropic NMR interaction of solvent as a new method for observation of phase transition of hydrogel with temperature change or change of solvent composition. Use of magnetic resonance imaging in slices to observe the collapse of polyacrylamide in water-acetone mixtures. Use of diffusion-weighted magnetic resonance imaging to observe phase transition of PNIPAM-based semi-interpenetrating polymer.