**Solid-state NMR study of plasticized starch**

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Polymers from renewable resources have attracted an increasing attention in the last two decades. Starch, one of the natural biodegradable polymers, has been considered a very promising candidate primarily because of its broad availability and low price. Starch is composed of amylose (poly-a-1,4-D-glucan) and highly branched amylopectin (poly-a-1,4-D-glucan and a-1,6-D-glucan) which forms amorphous and crystalline domains. Double-helices typical for chains in crystalline domains organize into clusters either in monoclinic (A type polymorphism) or hexagonal lattice (B type). Clusters are organized into superhelices which form blocklets arranged spherically into amorphous and semi-crystalline layers with thickness from 100 to 400 nm, and thus create a starch granule. Plasticized starch can be obtained by destruction of starch granules in the presence of plasticizers under specific conditions. In the present study, solid-state 1H and 13C NMR spectra, as well as 13C and 1H spin-lattice relaxation times (*T*1 (13C), *T*1 (1H)) and 1H spin-lattice relaxation times in the rotating frame (*T*1r (1H)) of native corn starch and starch plasticized by solution of water and glycerol were measured. Structural analysis proved A type polymorphism for both samples and 10 % decrease of ordering in plasticized sample. Analysis also confirmed interaction between starch and glycerol via hydrogen bonds. 1H NMR observations showed a presence of non-bonded water in both samples. Both carbon and proton relaxation times of starch dramatically decreased due to plastification of sample what is an evidence of increased molecular mobility of plasticized starch.