INVESTIGATION OF STARCH STRUCTURE BY 2-D TIME – DOMAIN NMR MEASUREMENTS

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The magnetization exchange in hydrated potato starch sample was studied by proton NMR relaxation measurements. The protons NMR signal comes from several spin groups (water and starch), which differ by molecular mobility and/or binding strength. The exchange processes (chemical exchange and/or magnetization transfer) change the recorded relaxation times which may differ from the intrinsic values.

We used NMR spin-grouping, a 2-D time–evolution technique. The spin-spin relaxation time T_2, spin–lattice relaxation time T_1 for protons were measured in room temperature for sample of dry and hydrated granular potato starch. Analysis of relaxation results for exchange showed that a two–site exchange system (water and starch component) is involved and a water-starch exchange rate is equal 86 s^{-1}.