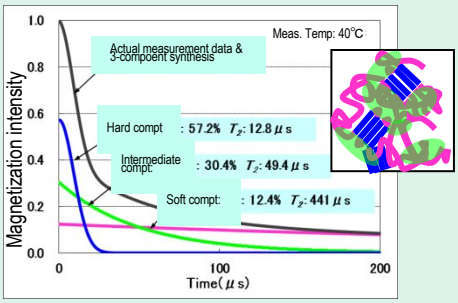
mc nac Technical Note

Evaluation of Molecular Mobility by Use of Pulse NMR

Summary

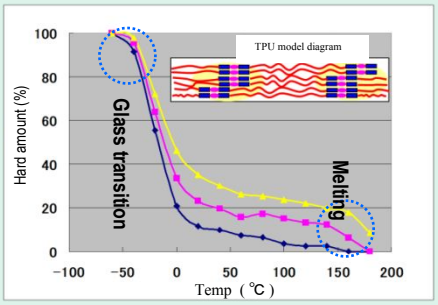
The evaluation of molecular mobility by use of pulse NMR makes it possible to investigate (1) the difference in high order structures, (2) changes in conditions with temperature, (3) correlation with physical properties of materials, (4) changes with time in crosslinking reaction, and ⑤ mobility of water particle in electrolyte film.

① Difference in crystalline/noncrystalline structure of PP



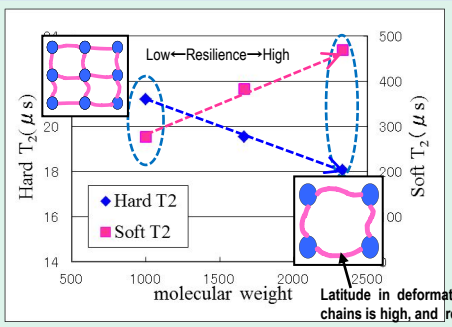
Ratio of presence of crystals and noncrystals of PP and mobility of molecular chains can be known.

② Change in conditions with PU temperature



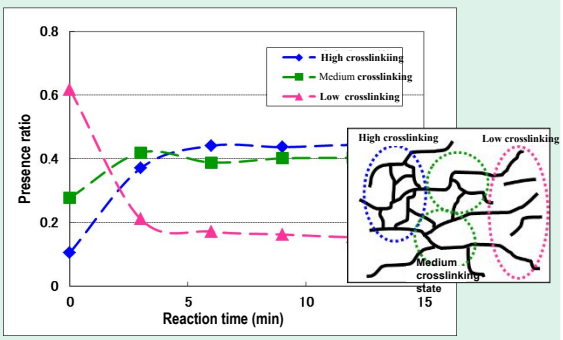
Melting process of hard component (crystal) of thermoplastic urethane can be observed.

③ Difference in resilience of urethane



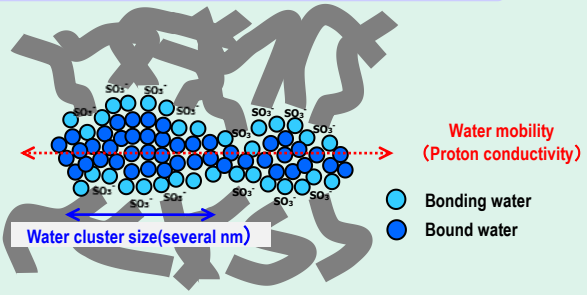
If the molecular weight of polyol in flexible urethane foam is high, the molecular mobility is high, and the resilience is high.

④ Change with time of epoxy crosslinking reaction



Analysis of change with time in thermosetting reaction process of epoxy is possible.

⑤ Water mobility in electrolyte film



Water cluster size in the film that has a correlation with proton conductivity in electrolyte film is evaluated by SAXS, and water mobility by pulse NMR.

Mitsui Chemical Analysis & Consulting Service, Inc.
E-mail: sod-mcanac@mitsuichemicals.com
http://www.mcanac.co.jp/