

高分子学会九州支部外国人研究者講演会

Soybased Polyurethane Issues of Miscibility

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日時： 2008年9月16日（火） 9：30 - 11：30

場所： 長崎大学 文教キャンパス

総合教育研究棟 多目的ホール

米国マサチューセッツ大学高分子工学科のShaw Ling Hsu教授は、高分子材料の振動分光解析、環境調和高分子材料の開発、高分子の表面・界面を中心とした研究を展開されている著名な研究者です。今回、福岡を訪問の際、長崎大学にもお立ち寄りいただき講演をしていただくことになりました。多数ご参加いただけますようご案内申し上げます。

Abstract

Soy-based polyurethanes continue to present a number of interesting challenges. We have focused on the miscibility of various components involved in the reaction. Because of the inherent hydrophobic nature of the soybased polyols, it is crucial that we determine the distribution of water in the formulation and their participation in the reaction. Deuterium NMR has proven to be an extremely useful technique for such analysis. This new technique has revealed the nature of water environment with greater spatial resolution than previously measurable. We have also analyzed the dynamics of proton-proton exchange rates. It is then possible to unequivocally determine the different environments in the formulation. The heterogeneous nature of the formulation is dependent on the composition and temperature. In addition, we have synthesized a number of prepolymers to determine the exact nature of the miscibility diagram and their changes due to the strong polar groups formed. We have also followed the extent of chemical reactions as a function temperature and composition. The relative kinetics of urethane and urea formation has also been determined. It is also clear that low field NMR spectroscopy is capable of measuring segmental dynamics thus yielding a direct relationship between structure and viscoelastic properties of the polyurethanes produced.

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