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INSTITUTO DE QUÍMICA
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PROGRESSOS RECENTES EM RMN ORGÂNICA

(WORKSHOP)

INFORMAÇÕES GERAIS

CAMPINAS 7 - 11 JULHO 1986

^{1}H-NMR APPLICATIONS TO THE STUDY OF UNSATURATED POLYESTER RESINS (USPR) AND OTHER INDUSTRIAL PRODUCTS

M.C. Bisso, H.A. Botto, M.T. Calatayud*

Departamento Química - Instituto Nacional de Tecnología Industrial - C.C. 157 - 1650 San Martín - Buenos Aires - Argentina.

It is described the applications of ^{1}H-NMR spectroscopy to the study of commercial USPR, giving information about cualitative and cuantitative results from 20 polyester systems for future references.

USPR are lineal polymers derived from condensation of some dicarboxylic acids with di or polyhydroxilated alcohols; a polymerizable monomer gives up the crosslinking unities, and also may act as a solvent.

Identificaton of USPR alcohols and acids was made by comparison of the sample spectra with model compound spectra, chemical shift Tables and some reference spectra from well-known composition resins.

Molar relations of acids and alcohols from USPR were obtained from cuantitative analysis. Interferences caused by terminal hidroxyl groups and those from non reactant alcohols were eliminated by the use of trichloroacetyl isocyanate (derivatization reactive) as they introduce errors in alcohols relation calculus.

Procedure described was applied to structural studies of these resins extracting information about composition, isomerization and monomer sequence. With these and previously published data, chemical shift Tables from 19 acids and 14 alcohols of potential use were elaborated, generating 20 polyester systems with a broad diversity of final properties.

^{1}H-NMR spectroscopy has been found to be the best and fastest technique for USPR characterization, giving answers to industrial requeriments about this important group of resins whose principal application lies on reinforced plastics field.

In a similar way other industrial products, i.e. elastomers and surface-active agents were studied. Dealing with elastomers ^{1}H-NMR spectroscopy was able to determine the composition of vulcanizated and non vulcanizated elastomers assigning microstructures of homopolymers, copolymers and blends. About surface active agents, the determination of their chemical structure made possible to connect this information with superficial activity, HLB value and biodegradability.

ANALYSIS OF NON-LINEAR EFFECTS ON SLICE SELECTION IN NR IMAGING.

Bonagamba*, T.J., Magon, C.J., Beckmann, N., Tannús, A., Panepucci, H. - *Instituto de Física e Química de São Carlos, USP, Caixa Postal 369, 13560-São Carlos, SP

Slice selection in magnetic resonance tomography is achieved by selective excitation with a radiofrequency (RF) pulse which spectral width is much narrower than the Larmor frequency distribution produced by the applied selection gradient. Ideally, one wishes to obtain a transverse magnetization which is zero everywhere, except for the selected region, for which $M_x = 0$ and M_y = constant. This requires the use of some spin refocalization technique following the excitation. The non-linear response of the spin system plus the finite lenght of the RF pulses are the main difficulties in achieving the above ideal result. Here we make an analysis of the various possible alternatives to handle this problem and point out the most convenient pulse sequences for 2D image generation.

Campo	Dado
*****	Documento 1 de 1
No. Registro	000833463
Tipo de material	TRABALHO DE EVENTO-RESUMO - NACIONAL
Entrada Principal	Bonagamba, Tito José (*)
Título	Analysis of non-linear effects on slice selection in mr imaging.
Imprenta	Campinas : Unicamp, 1986.
Descrição	p.a-6.
Autor Secundário	Magon, Cláudio José
Autor Secundário	Beckmann, N (*)
Autor Secundário	Tannus, Alberto (*)
Autor Secundário	Panepucci, Horácio Carlos
Autor Secundário	Workshop: Progressos Recentes em Rmn Organica (1986 Campinas)
Fonte	Programa e Resumos, Campinas : Unicamp, 1986
Unidade USP	IFQSC-F -- INST DE FÍSICA DE SÃO CARLOS
Unidade USP	IFQSC-F -- INST DE FÍSICA DE SÃO CARLOS
Localização	IFSC PROD001522