

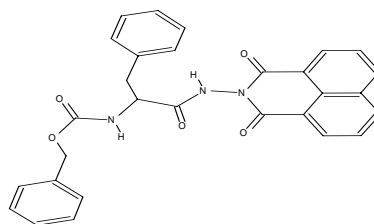
Spin relaxation for studying the solvent behavior in an organo-gelation process

*E. Steiner*¹, *M. Yemloul*¹, *S. Bouguet-Bonnet*¹, *A. Robert*¹, *F. Allix*², *B. Jamart*², *D. Canet*¹

1) *Méthodologie RMN (CRM² UMR 7036, Nancy-Université-CNRS), Faculté des Sciences et Techniques, B.P. 239, 54506 Vandoeuvre-lès-Nancy (cedex), France*

2) *Laboratoire de Chimie Physique Macromoléculaire (LCPM UMR 7568, Nancy-Université-CNRS) 1 rue Grandville BP451, 54001 Nancy, France*

Mehdi.Yemloul@rmn.uhp-nancy.fr



Some low-molecular-weight molecules can adopt, in an appropriate solvent, a gel organization under proper concentration and temperature conditions [1]. This is the case of the pseudo amino-acid displayed above (a phenylalanine derivative) that forms thermo-reversible gels in toluene [2].

Relaxometry (measurements of proton spin relaxation times as a function of the static magnetic field B_0 value) is a well established method for studying interactions between small molecules and large structure such as porous or organized media (gels fall in this category). In order to characterize the role of the solvent in the gelation process, we measured the proton relaxation times T_1 for resonance frequencies ν_0 in the range 5 kHz – 400 MHz.

The dispersion curves ($R_1 = 1/T_1$ vs. ν_0) revealed: i) that pure toluene is subjected to paramagnetic relaxation (arising from dissolved O_2), ii) that, in the gel phase, part of toluene molecules is strongly interacting with the gel surface. This latter result allows us to classify this organogel as wet. A thorough analysis of the dispersion curves reveals that 52% of toluene interacts with the gel surface at 20°C, this figure dropping to 35% at 30°C.

[1] P. Terech and R. G. Weiss, *Chem. Rev.*, **97**, 3133 (1997)

[2] Q. N. Pham, N. Brosse, C. Frochot, D. Dumas, A. Hocquet and B. Jamart-Grégoire, *New J. Chem.*, **32**, 1131-1139 (2008)