

Measuring methods available and examples of their applications

DOSY (Diffusion Ordered SpectroscopY)

Characterization of molecular weight: Diffusion Ordered SpectroscopY - DOSY

The DOSY method measures the translational self-diffusion of molecules in solution and allows a precise analysis of a complex mixture without any prior separation of the different components. Binding of substituents to the substrate during the synthesis of drugs can be also verified by this method. NMR diffusion experiments provide a way to separate the different compounds in a mixture based on the differing translation diffusion coefficients (and therefore differences in the size and shape of the molecule, as well as physical properties of the surrounding environment such as viscosity, temperature, etc.) of each chemical species in solution.

A series of spin echo spectra is measured with different pulsed field gradient strengths in a pseudo-2D manner, and the resulting signal decays provide the diffusion axis after the data processing.

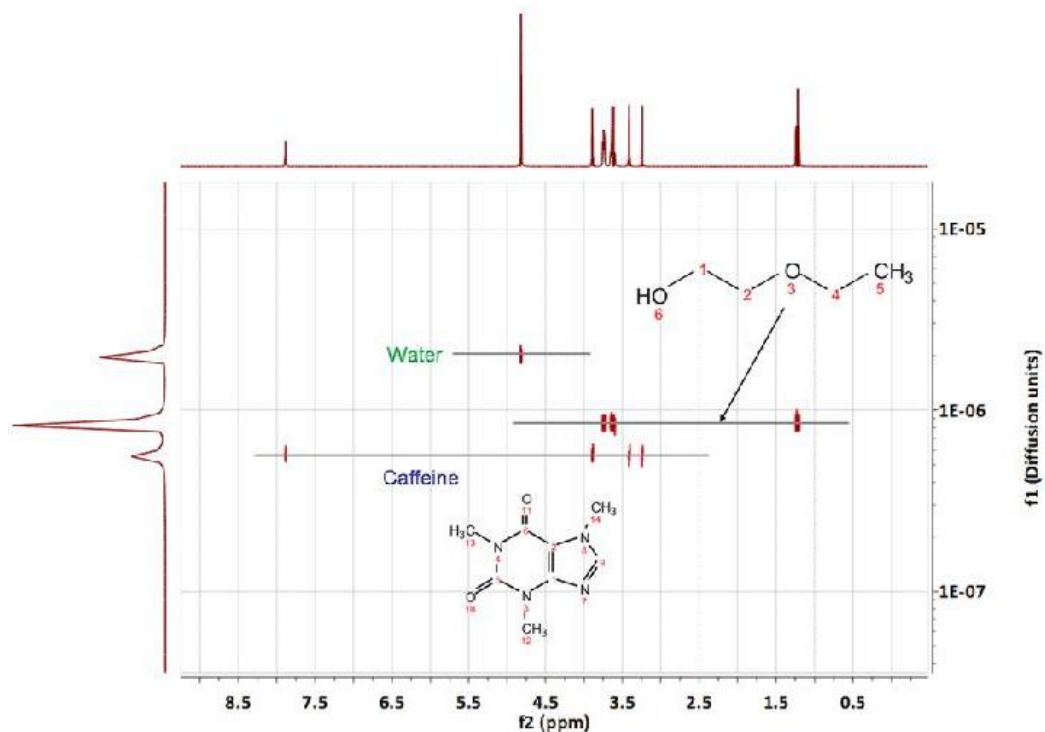


Fig. 1. DOSY spectrum of a mixture of three compounds with different molecular weights.