

## **Using PGSE NMR for chemical mixture analysis: Quantitative aspects**

Pulsed gradient spin echo NMR coupled with a data processing approach such as direct exponential curve resolution algorithm may be used to resolve individual components in a mixture. Differences in the diffusivities of the components lead to differences in their signal decay behavior in the experiment and allow for pure component spectra to be resolved. Because the experiment is echo-based, differences in the relaxation behavior of the nuclei within the various components lead to nonquantitative spectra. As a consequence it is rarely used to directly determine the levels of the components quantitatively. This article explores the effects of signal loss in the PGSE NMR experiment because of relaxation and describes an extrapolation method to ultimately obtain quantitative pure component spectra from mixtures. Examples of surface-modified nanoparticles are presented.