Guest Editors' Foreword

The 'Third International Conference on the Applications of Magnetic Resonance to Food Science' which took place in Nantes in September 1996 has been the main stimulation for this Special Issue of Magnetic Resonance in Chemistry. Most papers in this issue describe original results but some authors were asked to devote a larger section to a more general review of the subject in order to focus attention on specific and up-to-date problems.

Due to the heterogeneity and high complexity of most food products, NMR has long been considered as inappropriate for the study of these matrices. Moreover, since NMR methodologies require sophisticated instruments which are relatively costly and not easily adapted to production lines, research in food science has not been pushed by strong industrial demand. Until the eighties, the only technique widely applied was 'low-resolution' NMR. However this situation has rapidly evolved over the last 15 years as a result of a number of crucial technical improvements. The development reached such a point that in 1992 food NMR spectroscopists in Europe were encouraged to organize a specific conference to focus on recent progress in this area. The decision was taken to hold this event every 2 years (next meeting 7–9 September 1998 in Norwich).

Indeed, as this special issue illustrates, the whole range of NMR techniques is now exploitable and a large range of food properties concerning all kinds of food products can be explored. Although the list of papers presented here does not intend to quantitatively mimic the relative importance of the various research orientations in food science, it reflects both the new information accessible by the recent NMR methodologies and the improved performance of the more traditional techniques. Thus substantial proportion has been given to the high potential of imaging and micro imaging magnetic resonance for non-destructive and possibly, automatic, characterization of the evolution of food products. High-resolution solid state NMR also offers new possibilities for investigating structural properties of native or elaborated products. Moreover, for a number of problems, the possible NMR access to *in vivo* observation provides a unique source of information. In addition, with the availability of high-field spectrometers, renewed interest has focussed on conventional proton, carbon or heteroatomic high-resolution spectroscopy. Increased sensitivity, improvement in signal processing, implementation of statistical data treatment and progress towards flexibility, automatization, and on-line adaptation, are expected to encourage further original applications exploiting the whole set of structural, quantitative and mobility characteristics of food components.

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