

## **Solid-state NMR: a Technique for the Characterization of Materials and Biomolecules**

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In the last two decades has been observed a surprising development of the solid-state NMR technique (ssNMR), that from an elite of research laboratory is now ready to be used also by the general chemist and is routinely applied in pharmaceutical industry. Solid-state NMR provides a unique point of view in the characterization of pure compounds, and mixtures in the solid phase. Nowadays by ssNMR is possible to determine the structure and characterize the dynamics in several biosolids, from amyloid aggregates to membrane proteins, making possible to characterize insoluble and not-crystalline protein aggregates that cannot be investigated otherwise. As well by ssNMR we can investigate amorphous materials, or to determine the structure of the catalytic active species in the surface of supported catalysts. Here we will present an overview of the technique, with a special attention on the recent progresses of the technique (Ultra-Fast MAS, DNP,...), and focusing the attention on the methods for the determination of structure and characterization of the dynamics in solid proteins and in Material Science and Nanoparticles.