

Report

Summary

The scientific workshop on the *NMR of Biological Solids* took place at the “Institut de Biologie Physico-Chimique” (IBPC) in Paris, France, on 18th of September, 2009, right after the Alpine NMR conference in Chamonix (<http://www.alpine-conference.org/>). Our aim was to extend the discussions initiated in Chamonix on topics such as *membrane protein* studies by solid-state NMR (magic angle spinning or aligned samples), *fibrils*, *microcrystalline proteins*, *structure determination of biosolids* in order to foster collaborations in this research field. The next workshop will take place in two years.

This first workshop was dedicated to Philippe Devaux to celebrate his 70th birthday and his commitment for using solid-state NMR spectroscopy to study biological applications.

This workshop was the occasion for young scientists who could not attend the conference in Chamonix to meet leading researcher for discussions on the recent developments on protein membranes. For that reason, we wanted this first workshop to have the registration free of charge. Travel, accommodation and dinner fees were covered for the speakers. Lunch and two coffee breaks were served for all the participants. Part of the reception fees was covered by the IBPC in Paris. In addition, travel, accommodation and dinner fees for the US participants were covered partly by the Chamonix conference and partly by the Research Coordination Network of Emerging Methodologies for Molecular Structure Determination in Biological Solids (RCN), network coordinate by Ruth Stark.

In addition to support from IBPC, RCN, the workshop was kindly sponsored by *EMAR*, the Institut de Chimie des Substances Naturelles of the CNRS (ICSN), the Institut des Sciences Biologiques of the CNRS (INSB), Bruker, Cortecnet, Eurisotop, Isotec.

2) Description of the scientific content and discussions

The following speakers participated to the meeting: Rachel Martin and Piotr Tekely showed new methodologies in solid-state NMR, Antoine Loquet and Moreno Lelli presented protein structure determination protocols by solid-state NMR spectroscopy whereas Burkhard Bechinger, Huub de Groot and Simon Scheuring presented studies on membrane proteins. The last two speakers work on similar systems but use different techniques to study them, solid-state NMR and Atomic Force Microscopy.

3) Assessment of the results and impact of the event on the future direction of the field

An evaluation form of the meeting was sent to the participants. 13 out of 43 answered it and most of them heard of the event through: <http://www.drорlist.com/nmрlist.html>

Most of the participants who answered the evaluation form were happy with the format of the meeting, the lectures length, the breaks and the food.

While not everybody would appreciate a poster session, an overwhelming response was expressed in favour of having the pdfs of the talks available. Of course, this would also depend on the speakers but we will ask them if they are willing to provide them.

Finally, most of the discussions were about the balance between solid-state NMR and other techniques. Unexpectedly for us, but we were very happy about it, the attendance was quite mixed. Among the 13 people who answered the evaluation form, only one third came with a pure solid-state NMR background, another third with solution-state NMR background and a final third with a totally different background (AFM, EM, X-ray, Biochemistry...).

It is then not so surprising that a majority thought that there was too much solid-state NMR, too much preliminary solid-state NMR knowledge required and too much theory at times. This is definitely our fault and we will amend our program next time, both in terms of speech selection and by telling the speakers to adapt their talks to a broader audience.

4) Final program of the meeting

8:10 – 12:10	Session 1 (chair: Luminita and Dror)	Solid-state NMR methodology for biology
8:10 - 8:30	Morning Coffee	
8:30 – 8:45	Organising committee	Introduction
8:45 – 9:00	Ruth Stark, RCN New-York, USA	The RCN network
9:00 – 9:40	Rachel Martin, UCI, Irvine, USA	Hardware and methods development for solid-state NMR of locally ordered biomolecules
9:40 – 10:20	Piotr Tekely, ENS, Paris, France	New methodologies in solid-state NMR designed for biological systems
10:20 – 10:50	Coffee Break	
10:50 – 12:30	Session 2 (chair: Christina and Dror)	Protein structure determination by solid-state NMR
10:50 – 11:30	Antoine Loquet, IBCP, Lyon, France	Protein structure determination by magic angle spinning solid-state NMR
11:30 – 12:10	Moreno Lelli, CERM, Firenze, Italy	Paramagnetic restraints for structural determination of biomolecules through solid-state NMR
12:30 – 14:00	Lunch	
14:00 – 15:20	Session 3 (chair: Christina and Dror)	Photosynthetic membrane proteins
14:00 – 14:40	Simon Scheuring, Institut Curie, Paris, France	Principles of the AFM technique and its application to membrane proteins
14:40 – 15:20	Huub de Groot, Leiden University, The Netherlands	Solid state NMR structures of self-assembled natural and artificial light harvesters for solar energy to fuel conversion
15:20 – 15:50	Coffee Break	
14:00 – 15:20	Session 3 (chair: Luminita and Christina)	Membrane peptides by solid-state NMR
15:50 – 16:30	Burkhard Bechinger, Université de Strasbourg, France	Recent advances on solid-state NMR of membrane peptides
16:30 – 16:45	Organising committee	Concluding remarks