Programme Title: Multidisciplinary Frontiers of Magnetic Resonance

Programme acronym: EMAR

Standing Committee: PESC

Additional Standing Committees: This is a multidisciplinary proposal with a strong impact on life sciences (LESC), and to a lesser extend, on medicine (EMRC).

Principal Applicants

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Keywords: NMR, EPR, Magnetic Resonance,

Abstract

Magnetic resonance techniques are among the most powerful and versatile spectroscopic tools with applications in many different fields. Their wide range of applications stimulates a great deal of cross-disciplinarity and the history of their continuous advances parallels that of their diverse fields of application. The agreement between different European Magnetic Resonance organizations to jointly run EUROMAR provides an opportunity to foster NMR and EPR in Europe to a leading international role and to transfer this strength along the complete scientific network that develop and uses these techniques. The proposal contains instruments to enhance interdisciplinarity and the discovery of new fields at the frontiers between different disciplines as well as training activities aiming at ensuring an optimal transfer of the knowledge down to the student level and across the national boundaries, through the participation of National Societies.

This proposal focussed in six topics each year that will be developed by a working group under the leadership of a recognized scientist and should be essentially

interdisciplinary. The impact will be enhanced through the scientific Programme of EUROMAR conferences.

Training activities tailored to the specific needs of each country will be developed by National Societies with sponsoring from the Programme with the aim of enhancing transfer of knowledge from the most reputed research groups and stimulate trans-national contacts even at the student level. Fellowships sponsored by the Programme will contribute to stimulate the participation of young scientist and the development of a network of contacts that will persist during their careers. Strengthening EUROMAR as the meeting point for all flavours of magnetic resonance in Europe will undoubtly increase the European competitiveness across many fields of chemistry, physics, engineering, life sciences and medicine.

Other ESF applications

The authors of this proposal are not aware of any other applications to the ESF in the same field. There is a EURESCO conference of NMR in Biology. The present proposal does not interfere with this conference series since it addresses a much wider and larger audience across all fields of applications, encompassing all forms of magnetic resonance including EPR. The present proposal has a strong distributed training component and aims to cross interdisciplinary barriers.

Scientific Context

Nuclear Magnetic Resonance (NMR) and the closely related Electron Paramagnetic Resonance (EPR) techniques are probably the most versatile spectroscopic techniques with a range of applications that span across highly diverse fields in chemistry, physics and biology. The history of magnetic resonance is a paradigmatic success story of how basic experiments devised to test fundamental ideas of particle physics have given rise to techniques that occupy a central position in all branches of chemistry, have become a reference tool in structural biology, an imaging technique in medicine, a drug screening tool in the pharmaceutical industry, or a test ground for quantum computing concepts, to name just a few prominent applications. The neighbouring field of EPR is currently undergoing a very rapid expansion.

Requirements for improved instrumentation are driving technological improvements in superconductivity. Europe hosts some of the most active industries in this field. Basic NMR instrumentation is available in even the smallest universities. Top-level research centres in Europe and a network of EU-funded large-scale facilities are available to make large instruments widely accessible. A number of high field instruments have

been established around Europe as national or regional facilities. This deployment of resources witnesses of the vivid interest of the scientific community for NMR applications.

The power of NMR and EPR arises from their interdisciplinary nature. It is the extensive exchange between the groups that develop methodological tools and those that apply them to diverse problems that has powered the continuous development of the field. And is the exchange between seemingly unrelated areas of application, each with their own particular problems, that is fuelling new creative experiments.
Medical applications of MRI stimulated the development of gradient technologies, which have become standard tools for high resolution NMR and has recently lead to new, very efficient experiments that fulfil the needs of the high-throughput requirements of the post-genomic era.

Solid state applications, which had to overcome the problems due to the interactions that depend on orientation in immobile systems, paved the ground for new techniques based on “residual dipolar couplings” that provide long-range angular information in biological macromolecules in solution. This new field provides access to a new window of dynamic information that could not have been explored before.

Magnetic resonance has become a training ground for scientists who have achieved success in other areas of science. Well-known scientists such as George Whitesides at MIT or the European Nobel prize winner Jean-Marie Lehn published methodological NMR papers in their carriers. NMR training exposes young scientists to a unique combination of theory, methodology and applications that can prove useful for their future scientific careers, even outside the NMR field.

Magnetic resonance spectroscopies have a direct influence in the scientific and technical competitiveness in many different fields. This is implicitly recognized by the widespread distribution of instruments and NMR groups in Europe, the United States and Japan. EPR and NMR have been in continuous evolution since their discovery and to fully exploit the potential of NMR and EPR it is necessary to establish mechanisms to stimulate their development into new interdisciplinary areas and to transfer efficiently the state of the art technical and conceptual developments across a large and diverse population.

This scientific diversity can be viewed in three dimensions: i) Scientific and technical expertise, ranging from the top specialists that are expanding the frontiers of the field to new students starting a Ph.D. in one of the areas of magnetic resonance, ii) interdisciplinarity, coming from the diverse backgrounds (physics, chemistry, biology, medicine, and their different subareas) of scientist that develop and apply magnetic resonance techniques, and iii) interculturality, arising from the different educational backgrounds, social influences and priorities, economic systems and circumstances of different national communities.

Practical difficulties in NMR and EPR training include the fact that individual research groups tend to be highly specialized and a large number of final users are barely aware of the strengths and possibilities of the technique, so that they tend to restrict themselves to a few standard experiments. Specialization may lead to isolation of smaller research groups, especially in countries with a lower scientific population.

The Magnetic Resonance communities in Europe have established organizations at different levels. In the one hand, national communities have created NMR discussion groups with different levels of activity. On the other hand, major European NMR research conferences have acted as meeting point for active research groups, although a dispersion of efforts had led to a loss of world-wide influence of European magnetic resonance research conferences.

In Veldhoven (Netherlands) 2005 EUROMAR resulted from the merger of three established European magnetic resonance conference series: The European Experimental NMR Conferences (EENC), the Ampère Conferences, and the international conferences of the British NMR discussion group. The new EUROMAR conferences, with an expected attendance in the 600-1000 range, are intended to become a nucleating element for basic and applied NMR and EPR in Europe and as a meeting point that promotes interdisciplinary research within the wide spectrum of specialities of NMR and EPR and between magnetic resonance as a whole with neighbour fields of basic and applied research.

Objectives and envisaged achievements

The creation of EUROMAR offers a unique opportunity to go beyond a mere forum for specialists: it can nucleate an efficient network that encompasses and integrates the wide field of magnetic resonance in Europe. To fulfil this its aims it should work proactively in different directions: i) in a European dimension by approaching the

national NMR and EPR communities in Europe ii) in an interdisciplinary dimension, by establishing links and coordinating with specialized groups in different areas, and iii) in a training dimension.

This proposal envisages to

i) Facilitate, integrate and disseminate the work carried out by the National NMR and EPR communities in different countries of Europe.
ii) Stimulate the development of magnetic resonance in interdisciplinary areas, by promoting the coordination and the exchange of views between leading NMR and EPR groups in different areas and disseminating their shared visions of the new frontiers to the whole magnetic resonance community.
iii) Promote the fast transmission of new concepts and techniques from the research frontiers to the basic training level establishing a continuous path across different levels of specialization.

The expected benefits from this Scientific Programme include

i) Identification of new application areas of magnetic resonance and the new technical and conceptual advances required to fulfil their needs.
ii) Consolidation of EUROMAR as the common meeting ground for magnetic resonance in Europe.
iii) A higher scientific output of EUROMAR conferences, stimulated by integration and by the enhanced active participation of a wider community both at the leading edge of the field and at the growing base.
iv) An increased rate of technology transfer down to the basic training levels to make the rapid development of NMR and EPR a source of competitiveness.
v) A more efficient use of instrumentation, medium and large, already installed and distributed across Europe by disseminating the best practices and experiments.
vi) A better coordination of the National Magnetic Resonance Societies and discussion groups.
vii) An Increased visibility and attractiveness of European Magnetic Resonance for scientists and students in third countries.

European context and expected benefits from European collaboration

Europe has some of the leading scientist in the field (three recent Nobel Prize winners in NMR are European and established in Europe), one of the major instrumentation suppliers, and one of the leading companies producing superconducting magnets essential for magnetic resonance. However, the centre of gravity in the field is presently in the USA with a strong push of Japan. The rapid evolution of the field requires a dynamic communication at all levels which is hindered in Europe by the dispersion caused by national boundaries, different educational systems, independent financing agencies, and scattered resources. This Scientific Programme aims to building a more efficient coordination at all levels across Europe that should result in an increased European competitiveness.

The Scientific Programme extends and complements existing coordination and networking activities. EUROMAR was created from the merger of three different European conferences in Magnetic Resonance. The 6th FP program has renewed its support to a network of Large Scale NMR facilities that offer access to high field NMR instrument. The organization of the 2005 joint EENC-Ampère-UK NMR DG meeting precursor in preparation for EUROMAR was organized with the support of the Dutch Large Scale NMR facility. The smaller but very active EPR community has recently established a COST action (P15) that favours exchange between individual research groups for specific applications on molecular biophysics but does not include connections to the larger NMR community or other application areas.

Stimulating the growth of the leading edges across interdisciplinary boundaries

The main aim of Europe-wide coordination should be cross-fertilization and the exploration of the frontiers of the field. This is an intrinsically difficult task since it requires merging different traditions and scientific cultures and breaking specialized language barriers. A way to achieve this aim is to facilitate a smooth convergence through a series of preparatory activities prior to the EUROMAR meeting. These activities could form the fabric of a working network that has the opportunity of transforming the merge of ideas into new productive research. Cross-fertilization activities should be focussed on specific frontiers with a potential to open new fields or solve specific problems. However, the list should remain open to integrate new enabling technical or conceptual advances.

An initial list of areas is suggested below which can be extended through proposals from the European NMR community or arising from the activities of this Scientific Programme. Six items would be selected each year by a steering committee.

- Solid-state structural and dynamics studies of macromolecules using magnetic resonance.
- Magnetic resonance and Information Technologies: Extracting information from NMR data of complex systems including systems biology and metabonomics.
- Paramagnetic systems: from contrast agents to molecular probes. Ligand design and other forms of encapsulating contrast agents.
- Magnetic resonance and nanotechnology: NMR and EPR of materials with high molecular weight. Convergence of magnetic resonance and nanotechnologies. NMR surface microscopy, magnetic force microscopy.
- Optics and EPR and NMR. Meeting the sensitivity challenge: hyperpolarization, chemically induced dynamic polarization, optical detection of NMR and EPR signals.
- Analogies between two-dimensional (2D) NMR, 2D EPR, 2D infra-red and 2D optical spectroscopy.
- Magnetic resonance and chemical bio-tools: merging the worlds of macromolecules and small molecules through NMR or EPR.
- Fast NMR strategies and the integration of different spectroscopic and separation methods.

In each area a well recognized scientist in this area would take the responsibility of organizing a small one-day working group meeting (up to ca. 10 people), sponsored by this Scientific Programme, which would explore the present status and future prospects of the area and would report to plenary sessions of EUROMAR meetings. It is expected and encouraged that panel members will also use this opportunity to discuss and plan collaborations between them.

Spreading knowledge and the coordination with National Societies

Training from the more basic level is a requirement for a sustainable network. Magnetic resonance methods are seldom taught in basic university training at the appropriate level to use them creatively. National Societies usually take the role of organizing courses of different levels to overcome perceived weaknesses in each educational system. This Scientific Programme would provide financial support for courses or training activities organized by National Societies and encourage trans-national contact by sponsoring the participation of leading specialists from other countries as invited speakers.

Budget

Interdisciplinary working group meetings

Travel, accommodation (one or two nights), for a one day meeting using low cost airlines is estimated to have an average cost of 400€ per person. 6 working groups of up to 10 people would be selected with a total budget of 24.000 € /year

National Society Training Activities

An estimated budget of 24.000€ / year would be allocated by the steering committee.

EUROMAR general assembly

The annual EUROMAR meetings would be partially sponsored by the Scientific Programme through a fellowship program and a contribution to the direct costs. Students fellowships would be provided up to a total budget of 24.000€. This could provide 40 fellowships of 600€ each that would cover travel, accommodation and registration expenses for attending EUROMAR meetings. A larger number of fellowships partially covering the costs of participation could be an alternative.

A direct grant to the budget of EUROMAR meetings of 30.000€ would be provided, allowing lower registration fees for all participants. This should make possible for many groups to be present in the meeting at different levels (group leaders, post-docs, students). Join participation at meetings increases the cohesion and motivation of the groups and lower registration costs in EUROMAR would have the reciprocal effects of increasing the group's scientific productivity and reinforcing their participation in EUROMAR and, therefore, their integration in the European network of magnetic resonance.

Administrative costs

Administration overhead: 15% (excluding EUROMAR organization grant and student fellowships). 15% of 48.000: 7200 €

ESF overhead: 7.5% of the budget

Sustainability of the network

We request support for a 5 year period (60 months). After this period we expect that EUROMAR conferences will have reached a stable participation close to 1000 people and consolidated the instruments started with this Scientific Programme. With this regular level of participation and reasonable fees, EUROMAR together with the complete network would become self-sustainable.

Budget Summary

Annual Budget		
Working group meetings		24.000
Training activities organized by National Societies		24.000
Student fellowships for EUROMAR meetings		24.000
EUROMAR conference organization		30.000
Administration costs		7.200
Subtotal	109.200	
ESF overhead (7.5%)		8.190
Total per year	117.390	
Total requested (60 months)		**586.950**

Programme Milestones

EUROMAR participation should reach 1000 people in 2010 and remain stable until the end of the programme.

Active participation of National Societies should reach 80% of the European countries by the end of the programme.

The percentage of NMR and EPR publications involving the collaboration of groups from two different European countries (based on ISI databases) should increase.

Prof. Geoffrey Bodenhausen

1. **Personal information**

   Born 7th May 1951, The Hague, Netherlands

2. **Professional career**

1970-74	Eidgenössische Technische Hochschule Zurich (ETHZ). Diploma in chemistry.
1975-77	University of Oxford. Doctoral thesis (D.Phil.) Supervised by Prof. Ray Freeman.
1978	University of California at San Diego, La Jolla, post-doctoral work with Prof. Robert L. Vold and Prof. Regitze R. Vold
1979-80	Francis Bitter National Magnet Laboratory, Massachusetts Institute of Technology (MIT), Member of Research Staff, , with Dr L. Neuringer and Prof. R. G. Griffin
1980-85	Laboratory of Physical Chemistry, ETH Zurich. Assistant and *Privat-docent* in physical chemistry, with Prof. Richard R. Ernst
1985-94	Institute of Organic Chemistry, University of Lausanne. Associate Professor
1987-90	Institute of Organic Chemistry, University of Lausanne. Director
1994-96	Department of Chemistry, Florida State University, Tallahassee. Professor
1994 -96	National High Magnetic Field Laboratory, Tallahassee. Director, Nuclear Magnetic Resonance Program
1996-	Department of Chemistry, Ecole Normale Supérieure, Paris. Professor.

1997-09/2001 Institute of Organic Chemistry, University of Lausanne. Extraordinary Professor (part-time)

10/2001 - Institute of Chemical Sciences and Engineering (ISIC), Swiss Federal Institute of Technology, Lausanne. Professor (part-time),

3. Honors

1976 Scholarship of the Salter's Company, London

1983 Prize awarded by the Association of Swiss Chemists

1990 National Latsis Prize awarded by the Swiss National Science Foundation

1993 Doctor honoris causa, University of Stockholm

1996 Fellow, American Physical Society

1997 Corresponding member, Royal Academy of Sciences of the Netherlands

4. Miscellaneous activities:

Visiting professor, Joseph Fourier University, Grenoble, 1989; Member of the Committee, Groupe Français d'Etudes de Résonance Magnétique (GERM), France 1984-89 ; Member of the Executive Committee, Experimental NMR Conference (ENC),1987-1991; Member of the Scientific Committee, 10th Congress of the International Society of Magnetic Resonance (ISMAR), 1989; Member of the Council, International Society of Magnetic Resonance, 1990 – present; Programme Chairman, 5th Chianti Workshop on Magnetic Resonance, Florence, 1993; President, Chemistry Division, Société Vaudoise des Sciences Naturelles, 1992-93; Chairman, 10th Swiss NMR Symposium, Lausanne, 1993; Chair, 37th Experimental NMR Conference (ENC), Asilomar, USA, 1995; Member of the Scientific Council of the Chemistry Department of the Ecole Polytechnique, Palaiseau, 1991-94; Member of the Committee for Advanced Detection in Science Policies, Swiss National Science Council (Leitungsausschuss Forschungspolitische Früherkennung), 1992-94; Member of the Scientific Committee of the French National Centre of Scientific Research (CNRS), Laboratory of Condensed Matter of Physics, Ecole Polytechnique, Palaiseau, 1993-94; Member of the Council of the Division of Physical Chemistry of the French Chemical Society, 1997-2001; Member of Concerted Action ''NMR Concert'' of the Training and Mobility of Researchers (TMR) Program of the European Union, 1997-2000; Director of graduate courses (Diplôme d'Etudes Approfondies, DEA) on Spectroscopic Methods, Université de Pierre et Marie Curie (Paris-6) 1997-2004; Member of the board of the post-graduate training programme (Ecole Doctorale) Inter///Bio (Interfaces between chemistry, physics and computer science with biology, Paris); Chairman, Swiss NMR Symposium, Lausanne, 2003; Coordinator, EU Research Training Network HPRN-CT-2000-00092 on 'cross-correlation' effects (2000-2004); Member of the European Expert Group on Fine Analysis of Matter, 2000-2001 (French delegation); Member of the Comittee of EENC (European Experimental NMR Conference)
2002-2005; Chair, Board of Trustees, EUROMAR (European Magnetic Resonance) from 2005.

5. Editorial boards and Societies

- Member of the editorial board, "Applied Magnetic Resonance", Kazan and Vienna, 1990-present; Member of the advisory board, "NMR - Basic Principles and Progress", Berlin, 1990-present; Member of the editorial board, "Chemistry - a European Journal", Weinheim, 1994-2001; Member of the editorial board, "Solid State Magnetic Resonance", Cambridge, 1995- present; Member of the editorial board, "Journal of Magnetic Resonance", San Diego, 1996 – present; Guest Editor for a Special Issue on Magnetic Resonance, ChemPhysChem (2004).
- Member of the Society for Magnetic Resonance in Medecine; Member of the International Society of Magnetic Resonance; Member of the New Swiss Chemical Society; Member of the American Chemical Society; Member of the American Physical Society; Member of the French Chemical Society.

6. Research (approx. 250 published papers and 13 patents)

Co-author with R. R. Ernst and A. Wokaun of a monograph that has been translated into Russian, Japanese and Chinese.

i) *Thermodynamics of Binding of 2-methoxy-3-isopropylpyrazine and 2-methoxy-3-isobutylpyrazine to the Major Urinary Protein.* R. J. Bingham, J. B. C. Findlay, S.-Y. Hsieh, A. P. Kalverda, A. Kjellberg, C. Perazzolo, S. E. V. Phillips, K. Seshadri, C. H.

Trinh, W. B. Turnbull, G. Bodenhausen and S. W. Homans. *J. Am. Chem. Soc.* **126**, 1675-1681 (2004).

ii) *Chemical Shift Anisotropy Tensors of Carbonyl, Nitrogen en Amide Proton Nuclei in Proteins through Cross-Correlated Relaxation in NMR Spectroscopy*. K. Loth, P. Pelupessy and G. Bodenhausen. *J. Am. Chem. Soc*. **127**, 6062-6068 (2005).

iii) *Anisotropic Local Motions and Location of Amide Protons in Proteins.* D. Bytchenkoff, P. Pelupessy and G. Bodenhausen. *J. Am. Chem. Soc.* **127**, 5180-5185 (2005).

iv) *A Simple Model for NMR Relaxation in the Presence of Internal Motions with Dynamical Coupling.* D. Abergel and G.Bodenhausen. *J. Chem. Phys*. **121**, 761-768 (2004).

v) *Slow Diffusion by Singlet State NMR Spectroscopy*, S.Cavadini, J. Dittmer, S.Antonijevic, and G. Bodenhausen, *J. Am. Chem. Soc*. **127**, in press (2005).

Prof. Miquel Pons

1. Personal information

Born 09.02.1956 Manresa (Spain).

2. Professional career

1979	Degree in Chemistry	University of Barcelona
1983	Doctor of Philosophy	University of London (Supervisor: Prof. Denis Chapman, FRS)
1986	Degree in Biology	University of Barcelona
1983-1987	Assistant Professor	University of Barcelona
1987-2003	Associate Professor	University of Barcelona
2003-present	Full Professor	University of Barcelona
2002-present	Director Biomolecular NMR	Barcelona Science Park
2004-present		Group Leader Institute of Biomedical Research

3. Scientific Interests

Nuclear Magnetic Ressonance. Structure and Dynamics of Proteins. Structure and Dynamics of Complex Organic Molecules. Supramolecular Chemistry. Molecular Design. Drug Design.

4. Honors

1979 Fundación Juan March Fellowship

2000 National Research Prize of the Spanish Biophysical Society

2001 President of GERMN (Grupo Especializado de RMN) of the Spanish Royal Society of Chemistry

5. Committees and Scientific Societies

Member of the Societat Catalana de Química, Real Sociedad Española de Química, Sociedad de Biofísica de España, American Association for the Advancement of Science.

Member of the Organizing Committee of the 21st European Peptide Symposium; Director of NATO Advanced Research Workshop in NMR in Supramolecular Chemistry; Co-chairman BCN2000 NMR in drug design symposium; Co-chairman BCN2002 NMR in drug discovery symposium; Co-chairman BCN2004 NMR in drug discovery symposium; Chairman of the Organizing Committee 1st Biennial GERM meeting; Member of the Organizing Committee 2nd. Biennial GERM meeting; Member of the International Scientific Committee. EUROMAR 2005; Member of the Organizing Committee: Brazilian-Luso-Spanish NMR meeting; Chairman of EUROMAR 2007. Coordinator of the International Graduate Program in Organic Chemistry University of Barcelona.

6. Research (approx. 120 publications)

i) *Dynamic NMR studies of supramolecular complexes* Pons, M., Millet, O. *Progress in NMR Spectroscopy* **38**, 267-324 (2001).

ii) *Combined use of NMR relaxation measurements and hydrodynamic calculations to study protein association. Evidence for tetramers of low molecular weight protein tyrosine phosphatase in solution* Bernadó, P., Åkerud, T., García de la Torre, B., Akke, M., Pons, M. *J. Am. Chem. Soc.,* **125**, 916-923 (2003).

iii) *Evaluation of chiral recognition ability of a novel uranyl-salophen based receptor: an easy and rapid testing protocol.* Dalla Cort, A., Pasquini, C., Miranda Murua, J.I., Pons, M. and Schiaffino, L. *Chem. Eur. J*. **10**, 3301-3307 (2004)

iv) *Interpretation of NMR relaxation properties of Pin1, a two-domain protein, based on Brownian dynamic simulations.* Bernadó, P., Fernández, M.X., Jacobs, D.M., Fiebig, K., García de la Torre, J. Pons, M. *J. Biomol. NMR* **29**, 21-35 (2004).

v) *Hydrodynamic Models and Computational Methods for NMR relaxation in "Nuclear Magnetic Resonance of Biological Macromolecules"* García de la Torre, J., Bernadó, P., Pons, M. *Methods in Enzymology*, **394** , 419-430 (2005).

Prof. Dr. Hans Wolfgang Spiess

1. Personal information

Born October 14, 1942, Frankfurt/Main, Germany

2. Professional Career

1962 – 1968	Study of Chemistry, University of Frankfurt (Diploma 1966, Ph.D. 1968, Physical Chemistry)
1968 - 1970	Florida State University, USA - Research Associate
1970 - 1975	Max-Planck-Institut, Heidelberg - Research Associate
1975 - 1983	University of Mainz - Research Asssociate,
1978	Habilitation, Professor (Physical Chemistry)
1981 - 1982	University of Münster - Full Professor (Physical Chemistry)
1983 - 1984	University of Bayreuth - Full Professor (Macromolecular Chemistry)
since - 1984	Max-Planck-Institute for Polymer Research, Mainz – Director

3. Research Areas

Development of magnetic resonance techniques (NMR and EPR) for elucidating structure and dynamics, phase behaviour, order, and interfacial regions of synthetic macromolecules and supramolecular systems. Relation of microscopic behaviour and functional properties of advanced materials.

4. Professional Duties/Stipends/Awards

1991 - 1992	President European Polymer Federation
1994 - 1996	Chairman Capital Investment Committee, Deutsche Forschungsgemeinschaft (DFG)
1997 -	Chairman Computer Committee, Max-Planck-Society
1999 - 2005	Member of the Scientific Council of the Federal Republic of Germany
2000 -	President Groupement AMPERE
1987	Leibniz Prize - Deutsche Forschungsgemeinschaft (DFG)
1997	Dr. h.c. Technical University Cluj-Napoca/Romania
1998	Dr. h.c. Adam Mickiewicz-University, Poznan/Poland
2002	Liebig Medal - Gesellschaft Deutscher Chemiker (GDCh)
2002	AMPERE-Prize - Groupement AMPERE, Zürich
2003	SPSJ Award, Society of Polymer Science and Technology, Japan
2005	Walther Nernst Medal, Bunsengesellschaft Physikalische Chemie, Germany

5. Five selected publications

i) *Advanced Solid-State NMR Methods for the Elucidation of Structure and Dynamics of Molecular, Macromolecular and Supramolecular Systems* S.P. Brown, H. W. Spiess*, Chem. Rev.* **101**, 4125-4155 (2001) Thematic issue "Frontiers in Polymer Chemistry

ii) *Block -Copolymer-Ceramic Hybrid Materials from Organically Modified Ceramic Prescursors* P. F. W. Simon, R. Ulrich, H. W. Spiess, U. Wiesner, *Chem. Mater*. **13**, 3464-3486 (2001), Special Issue "Organic-Inorganic Nanocomposite Materials"

iii) *Structural Relaxation of Polymers at the Glass Transition: Conformational Memory in Poly(n-alkylmethacrylates)* M. Wind, R. Graf, A. Heuer, H. W. Spiess*, Phys. Rev. Letters* **91**, 155702- 1-4 (2003)

iv) *Supramolecular Assembly of Dendritic Polymers Elucidated by ^{1}H and ^{13}C Solid-State MAS NMR Spectroscopy* A. Rapp, I. Schnell, D. Sebastiani, S. P. Brown, V. Percec, H. W. Spiess *J. Am. Chem. Soc*. **125**, 13284-13297 (2003)

v) *Advanced Solid State NMR for Polymer Science* H. W. Spiess *J. Polym. Sci*. **A 42**, 5031-5044 (2004)

STEERING COMMITTEE

This is a provisional list based on the EUROMAR board. The representation of countries not included in this board will be taken by the chairpeople of their NMR or EPR societies (see Programme Collaborations).

FRANCE
Geoffrey Bodenhausen Ecole Normale Superieure, Paris, Geoffrey.Bodenhausen@ens.fr.
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Christian Griesinger, Max Plank Institute für Biophysikalische Chemie, Göttingen, cigr@nmr.mpibpc.mpg.de.
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OTHER COUNTRIES
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Olga Lapina, University of Novosibirsk, Russia, olga@catalysis.nsk.su.
Lucio Frydman, Weizmann Institute, Israel, lucio.frydman@weizmann.ac.il

PROGRAMME COLLABORATIONS

The programme proposal has received enthusiastic support from existing National Magnetic Resonance Societies and Discussion Groups from 15 different countries. Five additional countries are represented through the European Federation of EPR societies. Individual letters of support are not included but the names of the societies and their representatives are listed below. Each society represents many research groups. An aim of the programme is to extend the participation to the remaining European countries and the list is, therefore, open.

AUSTRIA
Working Party Nuclear Magnetic Resonance Spectroscopy (AG-NMR) of the Austrian Chemical Society (GOeCh)
Prof. Dr. Norbert Mueller Johannes Kepler Universitaet norbert.mueller@jku.at.
BELGIUM
Scientific Research Network on Advanced NMR, Flanders (Belgium).
Prof. Paul Van Hecke, Katholieke Universiteit Leuven, Paul.VanHecke@med.kuleuven.ac.be.
CZECH REPUBLIC

I.M. Marci Czech Spectroscopic Society, Prof. Jan Schraml, Institute of Chemical Process Fundamentals, Academy of Sciences, Czech Republic schraml@icpf.cas.cz.

FRANCE

Groupe d'Etudes de RMN (GERMN)
Prof.Christian Roumenstand Centre de Biochimie Struct. UMR CNRS / INSERM. roume@cbs.cnrs.fr.

GERMANY

Division of Magnetic Resonance Spectroscopy of the German Chemical Society
Prof. Dr. Stefan Berger, Institut fuer Analytische Chemie, Universitaet Leipzig stberger@rz.uni-leipzig.de.

HUNGARY

Hungarian National NMR Committee:
Prof. Gábor Tóth, Department of General and Analytical Chemistry Budapest University of Technology and Economics Gabor.Toth@idri.hu.
Prof. Katalin E. Kövér Department of Inorganic and Analytical Chemistry University of Debrecen, kover@tigris.unideb.hu.

ITALY

GIDRMN
Prof. Stefano Mammi, Department of Chemical Sciences University of Padova, stefano.mammi@unipd.it.

NETHERLANDS

Dutch NMR-DG
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SWEDEN

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SWITZERLAND

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UNITED KINGDOM

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(**Netherlands and Belgium**), **Bulgary**, **France**, **Germany**, **Israel**, **Italy**, Nordic Countries (**Denmark**, **Finland**, **Iceland**, **Norway** and **Sweden**), **Poland**, **Portugal**, **Russia**, **Spain** and **United Kingdom**. Chairman: Prof. Etienne Goovaerts University of Antwerp (Belgium) Etienne.Goovaerts@ua.ac.be .