

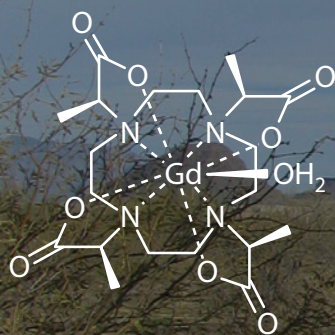
epr news letter

2017
volume **27** number **4**

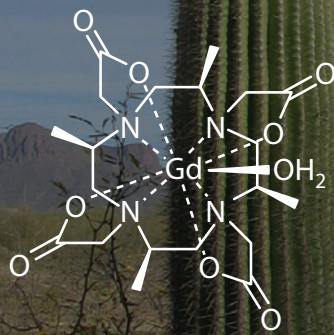
Gd(L0), $q = 0$

MS-325, $q = 1$

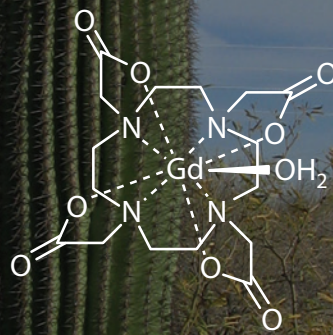
Gd(L2), $q = 2$



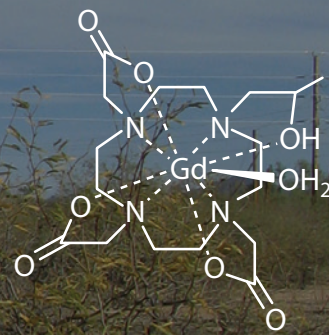
GdDOTMA, $q = 1$



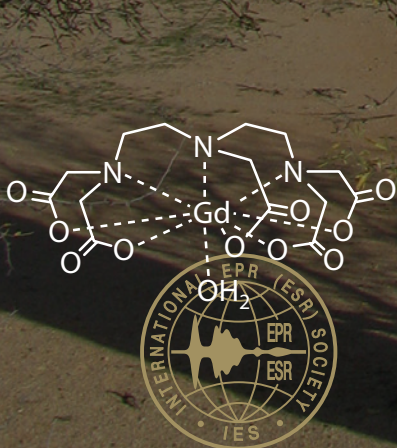
GdM4DOTA, $q = 1$



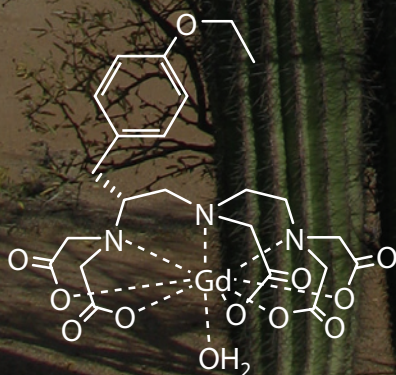
GdDOTA, $q = 1$



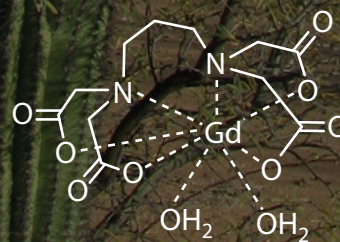
GdHP-DO3A, $q = 1$



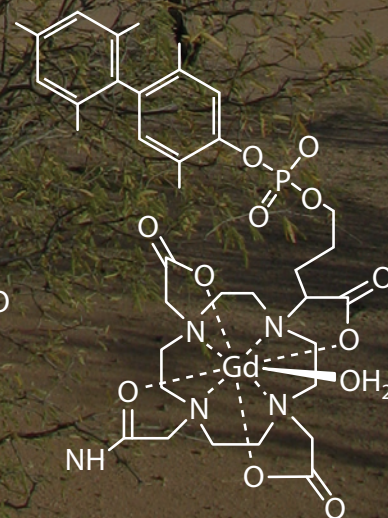
GdDTPA, $q = 1$



GdEOB-DTPA, $q = 1$



GdPDTA, $q = 2$



Gd(L'1), $q = 1$



The Publication of the International
EPR (ESR) Society



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Brebis Bleaney (1915–2006)

James R. Bolton

Harvey A. Buckmaster

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David Whiffen (1922–2002)

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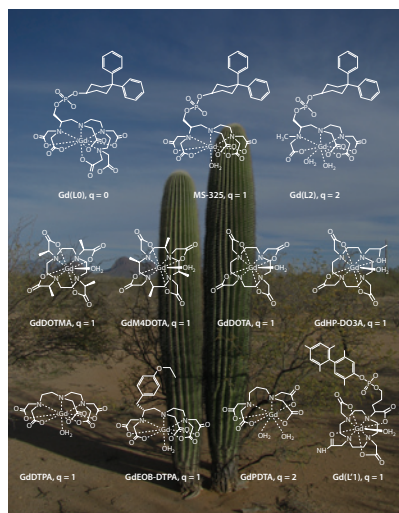
Please feel free to contact us with items (news, notices, technical notes, and comments) or ideas for the *EPR newsletter*.

The *EPR newsletter* is published quarterly by the International EPR (ESR) Society and is available in electronic and printed form to all members of the Society. The deadlines for submission of news for upcoming issues: Spring March, 15; Summer June, 15; Fall September, 15; Winter December, 15.

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The cover picture illustrates aspects of research carried out by Arnold Raitsimring, recipient of the Zavoisky Award 2016. It shows various Gd-based MRI contrast agents for which hydration numbers were determined by means of ^{17}O , H and D pulsed ENDOR in Ka, W and D mw bands.

epr news letter

The Publication of the International EPR (ESR) Society

volume 27 number 4 2017

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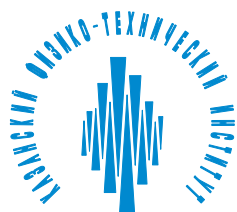
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ETH

Eidgenössische Technische Hochschule Zürich
Swiss Federal Institute of Technology Zurich

Editorial

Dear colleagues,

Again, Sergei Akhmin, our technical editor, has prepared a terrific cover picture, illustrating aspects of research carried out by Arnold Raitsimring, recipient of the Zavoisky Award 2016* whilst producing the impression that various Gd-based MRI contrast agents Arnold studied are New Year snowflakes falling in the Arizona desert. Well done, Sergei! With this New-Year cover we wish you, our dear readers, all the best in the coming 2018!

We are pleased to continue in this issue the celebration of the 50th annual international meeting of ESR Group of the Royal Chemistry Society by publishing the article "Notes on 50 Years of the RSC ESR Group" by Les Sutcliffe (pp. 10–13). The report about the IES Annual General Meeting (pp. 3–5) summarizes the diverse activities of the IES in 2017 and underlines the problems to be solved. The Anniversaries column is marking celebrations by sister societies: the articles "25

* Aspects of research carried out by Michael Bowman, recipient of the Zavoisky Award 2016, were illustrated in the cover of the EPR newsletter 14/3 (2004) on the occasion of his IES Silver Medal for Chemistry 2003.

Birthday Candles for the European Federation of EPR Groups (EFEPR)" by Sabine Van Doorslaer (pp. 6, 7) and "15+ Anniversary of the Society of Electron Spin Science and Technology" by Toshikazu Nakamura (pp. 7, 8) cover the relevant histories and identify the key challenges these societies face. It is inspiring that both demonstrate the intentions to collaborate with the IES.

I am grateful to Marina Brustolon who kindly attracted my attention to the fact that the name of Professor Ulderico Segre was misspelled in the article "2016 Ulderico Segre Prize" by George Cutsail (27/1-2, pp. 5, 6). I agree with Marina that this is particularly painful because the prize is offered by the family to have Ulderico Segre remembered and his contribution to EPR appreciated. I regret very much that I missed this typo. In this issue (p. 20) the relevant Erratum is published, the same as the author's after-proofs correction to the article "Looking Backward – How EPR research was done 65 years ago" by Harvey A. Buckmaster (27/3, pp. 10–14). Moreover, electronic versions of these issues available at the newsletter website (www.epr-newsletter.ethz.ch) are modified accordingly. Hope this information helps.

It is always a pleasure to thank our *EPR newsletter* team and collaborators for the help and support and fruitful contribution to the development of our publication: CEOs of the IES; Associate Editors Candice Klug (Americas) (who also edits the New EPR Faculty column), Hitoshi Ohta (Asia-Pacific), and Sabine Van Doorslaer (Europe) (who also edits the Present Meets Present column), Keith Earle (Tips and Techniques column), Wolfgang Lubitz (Guest of the Issue column), John Pilbrow (EPR newsletter Anecdotes column), and Stefan Stoll (Software column); Sergei Akhmin, our technical editor, who never stops to surprise us; Evhen Polyhach, our highly responsible webmaster; and last but not least, Scott Morton of LaPlume Printing, our long-term reliable and extremely efficient printer.

Laila Mosina



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IES ANNUAL GENERAL MEETING 2017

Minutes of the Annual General Meeting of the International EPR/ESR Society for 2017, held during the ISMAR2017 Joint with Rocky Mountain Conf. on EPR, Quebec City, July 27, 2017.

AGENDA

1. Introductory notes by Prof. Hitoshi Ohta
2. Brief Report of the Previous AGM – on September 8, 2016, in Torino, Italy
3. President's Report, Awards 2016, Poster Awards 2016
4. Secretary's Report
5. Treasurer's Report (Financial Report 2015–16)
6. The *EPR newsletter* Editor's Report
7. Thanks
8. Other business

1. Introductory notes by Prof. Hitoshi Ohta

Dear Colleagues,

On behalf of the IES Executive Board I wish to welcome all participants to the ISMAR2017 Joint with Rocky Mountain Conf. on EPR, Quebec City, July 27, 2017.

I would like to express my gratitude to the conference organizers of this meeting, especially to John McCracken, Michel C. Auger, and Gunnar Jeschke and for allowing our General Meeting to take place during this Conference.

2. President's Report

2.1. Brief Report of the Previous AGM – September 8, 2016, in Torino, Italy, see the *EPR newsletter* 26/4, pp. 3–5 (2016).

2.2. The importance of IES and its activities.

For basic science and applied research, EPR/ESR spectroscopy is continuing to become an increasingly important tool in a wide range of fields, from physics and chemistry to geology, biology, and medicine. The International EPR (ESR) Society will continue working to promote EPR and to foster scientific collaboration within the wide magnetic resonance community.

We'll be making a renewed effort to expand our membership. We believe that the IES has a lot more room to grow in terms of due-paying members. To achieve this, we need to increase the visibility and attractiveness of the Society New functions to increase the visibility of the Society were discussed among the Executives.

One of the ideas was to have joint IES symposium with other related EPR (ESR) conferences.

APES-IES-SEST 2014, Nara, Nov 12–16, 2014 (Specially reduced registration fee for IES members, 279 participants, 22 countries)

EPR BioDose 2015 and the 2nd IES Symposium, Hanover, Oct 4–8, 2015

Xth EFEPR Conference, Torino, Sept 4–8, 2016 (Including IES session)

ISMAR2017 Joint with Rocky Mountain Conf. on EPR (Including IES session)

Attracting present and new members will be one of central focus of IES, and we welcome ideas from current members. We look forward to hearing from you and working together to help the Society to grow and flourish.

Recently our Website is upgraded!! (see Secretary's report)

We need to communicate and collaborate with scientists both inside and outside of the EPR field. The *EPR Newsletter* is intended to help mediate the exchange of information about excellent laboratories and scientific meetings (see Editor's report).

2.3. IES Awards for 2017

A major function of the IES is to honor distinguished contributors to EPR/ESR.

The awards were initiated in 1992 with the Gold Medal and extended to Silver Medals in various specialized areas of EPR, Young Investigator Awards and IES Fellowships.

Please visit www.ieprs.org for full details on IES constitution and by-laws relating to Awards.

2017 IES awards the following distinctions:

Gold Medal

Silver Medal for Instrumentation

Young Investigator Award

IES Fellowship.

Poster Awards (11 (2014), 10 (2015), 13 (2016) and 11 scheduled in 2017!)

2017 Gold Medal

Daniella Goldfarb (Israel) *

2017 Silver Medal for Instrumentation

Gunnar Jeschke (Switzerland) *

2017 Young Investigator Award (IES)

Shi Fazhan (China) *

2017 IES Fellowship

Kalman Hideg (Hungary)

Betty Gaffney (USA) *

Jack Freed (USA) *

Wolfgang Lubitz (Germany)

2016 IES Fellowship

Arnold Raitsimring (USA)

* present here in Quebec



2017 IES Gold Medal to Daniella Goldfarb

IES Poster Awards

The IES sponsors Poster Awards for the best posters at select EPR-related meetings each year. Eligible candidates are graduate students and post docs (not later than 3 years after their Ph.D.) The Award includes a Certificate + US\$200 award + 1 year membership of IES. *IES Poster Awards for 2017*

The 50th Annual International Meeting of the ESR Spectroscopy Group of the Royal Society of IES Poster Awards for 2017, Chemistry, Apr 2–6, 2017, Oxford, UK (Europe)

The 5th Awaji International Workshop on Electron Spin Science & Technology: Biological and Materials Science Oriented Applications (AWEST2017), Jun 18–21, 2017, Awaji Island, Japan (Asia-Pacific)

EUROMAR2017, July 2–6, 2017, Warsaw, Poland (Europe)



2017 IES Silver Medal for Instrumentation to Gunnar Jeschke



2017 IES Fellowship to Betty Gaffney



2017 IES Fellowship to Jack Freed

International Conference on Electron Paramagnetic Resonance Spectroscopy and Imaging of Biological Systems (EPR2017), July 16–22, 2017, Morgantown, USA (Americas)

ISMAR2017 Joint with Rocky Mountain Conference on EPR, July 23–28, 2017, Quebec City, Canada (Americas) (Annual General Meeting of IES 2017)



2017 IES Young Investigator Award to Fazhan Shi

The 46th annual Southeast Magnetic Resonance Conference (SEMRC), Oct 27–29, 2017, Tallahassee, FL, USA (Americas)

We want to thank all the members of the Awards and Fellowship Committees for their excellent work for the Society.

Hitoshi Ohta

Call for IES Award Nominations 2018

Nominations are invited for:
Silver Medal Biology/Medicine
Silver Medal Chemistry
Young Investigator Award
Fellowship of the Society

Nominations, accompanied by 100–150 words citation and curriculum vitae, are due by 1 November 2017. For more information, see our www.ieprs.org.

New Proposal and Discussion

In order to attract sponsors, we need a large number of IES members like 1,000 (at the moment over 200 paid members). Our budget is mainly supported by the sponsors!

Proposal after AGM in Torino 2016 by Bruno Guigliarelli:

New category members (Affiliated IES members?) can be added from the each national regular paid members? (Examples: France 100, Japan 200 etc.). In order to attract sponsors, the *EPR newsletter* with advertisements should be distributed to new category of IES members.

Advantages: Increase the number of IES members easily. Attractive to the sponsors. Get potential IES officers?

Disadvantage: What will be the merits of IES members? (Reduced registration fee at various conferences?)

Proposed changes in the constitution related to the form of communication between members and voting procedure was presented and discussed. Details were circulated to members by e-mail.

3. Secretary's Report: Aharon Blank

The Secretary is responsible for the day-to-day operations of the Society, and ensures efficient functioning of the Society, e.g.:

1. The Secretary shall maintain all the records of the Society shall keep the minutes of Society meetings, and be responsible for the distribution of all essential information to members.
2. Sending out invoices to the sponsors (in consultation with the Treasurer).
3. Informing members (and sponsors) of the various items of interest, e.g. announce-

4. Treasurer's Report: Tatyana Smirnova (Financial Report 2016)

2016 Financial Report (\$) (self-audited)

Balance January 1, 2016	39,500.52
Deposits:	
Membership	6,085.16
Sponsors	10,782.00
Bruker contribution to printing	2,226.00
Total Income	19,093.16
Expenses:	
Internet commerce and merchant services	699.57
Web design / maintenance & fees	6,401.73
Newsletter printing (including 2,226.00 paid by Bruker)	7,184.00
Newsletter Editorial	3,242.00
State of Illinois+misc	269.75
Awards and medals (including 1,629.64 for 2015)	5,300.44
Total Expenses	23,097.49
Balance December 31, 2016	35,496.19

2017 (January-June)

Financial Report (\$) (self-audited)

Balance January 1, 2016	35,496.19
Deposits:	
Membership	1,729.46
Bruker contribution to printing	1,484.00
Sponsors	5,403.51
From SEMRC	200.00
Total Income	8,816.97
Expenses:	
Credit card fees, internet commerce and merchant services	338.46
Newsletter printing	3,030.00
Miss	13.00
Conference support	3,000.00
Awards and medals	1,005.38
Total Expenses	7,386.84
Balance July 31, 2016	36,926.32

ments of conferences, workshops, publication of new issues of the *EPR newsletter*.

4. Organization of material for awards given by the IES: medals, certificates and citations.

5. Overlooking financial status and membership of the Society (in consultation with the Treasurer).

6. Website: The IES web site was upgraded! Better appearance, mobile devices compatibility, and better functionality (see next slides).

7. Answering any enquiries.

8. Organizing AGM.

9. Liaisons with the President, Treasurer, Editor of the *EPR newsletter*, and the members of the IES Executive.

We want to thank Aharon Blank for his excellent work as Secretary of the Society.

Hitoshi Ohta

Presentation of the new web site and its features by the secretary.

Comments from the Treasurer:

Thank you, members and sponsors, for your support! Thank you, sponsors:

Bruker BioSpin Corp; JEOL Resonance, Inc; Active Spectrum; Virginia Diodes, Inc; Magnettech GmbH; Adani Systems, Inc; Wilmad-LabGlass; Norell, Inc; Cryogenic, Ltd; GMW Associates; L & M EPR Supplies; Research Specialties; Molecular Specialties; KEYCOM Corporation; Scientific Software Services; Oxford Instruments NanoScience; Elva-1 Microwave Handelsbolag.

Status of membership as of July 1, 2017

Complementary/sponsored	46
Membership: paid for 2017 so far!	109
Membership: paid for 2016	196
complimentary for 2016	50

Status for 2016

Full members	130
Emeritus	12
Students	33
Postdoctoral members	15

In 2016 members represent 28 countries: USA 67, Japan 36, Russia 20, Germany 18.

We want to thank Tatyana Smirnova for her excellent work as Treasurer of the Society.

Hitoshi Ohta

5. *EPR newsletter* Editor's Report: Laila Mosina

Since the previous Annual Meeting of the IES in 2016 in Torino (Italy), we published single issues 26/3 and 26/4, and a double issue 27/1-2. We hope you had a look at 26/3, 26/4 and 27/1-2 on the newsletter website and got copies of 26/3 and 26/4.

Now we start with the preparation of the forthcoming issue 27/3. To remind you, we present the columns of the newsletter:

Editorial
IES business
Awards
IES Young Investigator Award Revisited



Another Passion

Anniversaries
EPR newsletter Anecdotes
In Memoriam
Present Meets Future
Pro & Contra

Software
Tips and Techniques
Notices of Meetings
Conference Reports
New EPR Faculty
New Books and Journals
Market Place, Reader's Corner
Guest of the Issue

Please feel free to submit YOUR material, dear colleagues!!!

On behalf of the Editorial Board, I thank most heartily all contributors to the *EPR newsletter* with special thanks going to the CEOs of the IES and editors of the columns in the *EPR newsletter*: John Pilbrow, Candice Klug, Wolfgang Lubitz, Stefan Stoll, Keith Earle and David Budil, Sabine Van Doorslaer, and also to Yevhen Polyhach, our web-master, and Sergei Akhmin, our Technical Editor.

I gratefully acknowledge collaboration with Associate Editors Candice Klug, Hitoshi Ohta and Sabine Van Doorslaer.

We want to thank Laila Mosina and her editorial team for their excellent work for the *EPR Newsletter* of the Society.

Hitoshi Ohta

6. Thanks

The IES thanks the following Corporate Sponsors for their contributions in 2017:

Annual General Meeting 2017

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All paid up members
Newsletter Editor: Laila Mosina
Technical Editor: Sergei Akhmin
Associate Editors: Candice Klug, Hitoshi Ohta, and Sabine Van Doorslaer

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International EPR (ESR) Society Executives

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Vice President Asia Pacific: Elena Bagryanskaya
Vice President Americas: Stephen Hill
Vice President Europe: Graham Smith
Secretary: Aharon Blank
Treasurer: Tatyana Smirnova
Immediate Past President: Klaus Möbius
Founder President: Harold Swartz

Attendance list

Elena Bagryanskaya	Sushil Misra
Aharon Blank	Toshikazu Nakamura
Christoph Boehme	Hitoshi Ohta
Timothee Chauvire	Peter Qin
Jack Freed	Seknar Ramanathan
Betty Gaffney	Madhur Srivastava
Stephen Hill	Thomas Schmidt
Gunnar Jeschke	Fazhan Shi
Benesh Joseph	Alex Smirnov
K. V. Lakshmi	Tatyana Smirnova
Molly Lockart	Hans Wolfgang Spiess
Fraser MacMillan	Stefan Stoll
Dane McCamey	Art van der Est
John McCracken	Sabine Van Doorslaer

25 birthday candles for the European Federation of EPR Groups (EFEPR)

EFEPR

The European Federation of EPR Groups

The European Federation of EPR Groups celebrates this year its 25th birthday. Birthdays are cause for celebration, but also for a critical reflection on the past and future. As many of you know, the EFEPR is a non-formal organization which includes both larger regional EPR groups and individual European EPR researchers. In 1992, the EFEPR was founded following an idea launched during the 1991 joint conference of the British and Italian ESR groups. The foundation of the Federation matched the common need for a forum that would gather all European researchers dedicated to both the development and the application of EPR techniques in broad fields of science. The timing of this collective initiative was, in retrospect, not surprising. Europe had just gone through a period of events that many had believed never to witness during their lifetime: the iron curtain had fallen. In science, this meant that finally all collaborations between researchers from the East and the West became possible. During the Cold War, many European EPR scientists had remained in contact across the political border, but scientific exchange visits were not always straightforward. However, by 1992 the borders were open! The European idea enthused also the EPR world and led to the foundation of EFEPR. Klaus Möbius was

elected its first president, succeeded by Marina Brustolon, Daniella Goldfarb, Etienne Goovaerts and Graham Smith. In 2016, during the 10th EFEPR meeting in Torino (Italy), it was decided to change the structure and have two vice-presidents and one president. The present team is Carole Duboc, Donatella Carbonera and myself (Sabine Van Doorslaer). But the identity of the EFEPR is first and foremost reflected by the many scientists that make up the Society.

In the past 25 years, EFEPR has inspired the organization of 10 well attended conferences and 7 highly successful summer schools in different European countries (Portugal, France, Spain, UK, Belgium, Germany, Italy, and Israel). I use the word 'inspired', because the EFEPR is relying fully on the voluntary work of EPR scientists throughout Europe. The EFEPR has no financial income – there is not even a membership fee – and yet, this community has done many things to be proud of. This is unique and the credit of all European EPR scientists that have put their shoulders under this project in the past 25 years. On the new EFEPR website (<http://efepr.uantwerpen.be/efepr>) the contact addresses for EPR scientists from more than 30 European countries can be found, illustrating that EPR is very much alive in Europe. And still, many

of us worry about the future of EPR. There is the general financial worry that we share with scientists all over the world, now that it has become increasingly more difficult to find money for fundamental research. However, there is also a very particular Calimero attitude that we have started to adopt in the EPR community. We often complain that EPR is not recognized enough in the larger magnetic-resonance community or that it is considered by many of our peers as a niche technique, and yet we act to enforce this. We very often apologize in advance to our colleagues for the fact that EPR is not broadly known. Just think of how many times you have answered, when asked what you do, something like 'I'm doing EPR, but you probably won't know the technique; it is something related to NMR, but with electrons.' I confess, I often do, and I've heard others do the same. However, the importance and impact of a scientific research field lies both in the beholder's and in the presenter's eye, and we should take that responsibility.

This brings me to the future of the EFEPR. Since 1992, many things have changed in Europe. In daily life, the initial united European enthusiasm has disappeared and is gradually being replaced by national reflections. Of course, we, scientists, don't think in terms of

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borders, but our financial needs put also constraints on what we can realize. Moreover, the world-wide trend to reduce the evaluation of scientists to some numbers like the h-index and the enormous pressure on scientists to go for breakthroughs and high impact, has tremendously influenced the academic world. It has become less evident to justify a voluntary involvement in activities that do not have an obvious return on investment for the academic home institutions. This is felt also by the EFEPR. In the past few years, it has proven to be very difficult to find a new hosting place for the EFEPR summer school under the conditions that we had gotten accustomed to, i.e. 8–10 days of high level training for relatively cheap fees and travel expenses. This calls for a rethinking of how we want to organize these schools in future years.

The EFEPR meetings have been among the important achievements of our Society and will continue to be so. In 2019, the EFEPR meeting will be held in Slovakia. When preparing this text, I realized that this will be the first time the EFEPR meeting will be held in an Eastern European country. I hope we can move more often to the East of Europe for future meetings and schools.

Furthermore, the ways we communicate have changed dramatically in the past 25 years. Whatever the older generation (and I consider myself one of them) may think of social media, it has become the way the young generation is communicating. The EFEPR should also follow up this trend. With the new website and the possibility to post new jobs in EPR on the website, we hope to launch an active forum, where young EPR scientists turn to when looking for a new job. We also consider the idea of an EFEPR Facebook page where questions on all kinds of aspects of EPR can be discussed. Social media can also be used to broadcast the possibilities of EPR to a wider community, and perhaps international EPR organizations like EFEPR or IES should try to play a role in this. This is definitely a point where the younger scientists can get more involved, it concerns their future careers.

After 25 years, EFEPR is clearly still a lively Society with a lot of potential. However, it is obvious from the above that the success of its initiatives depends on the input of the entire European EPR community. They have successfully shaped the past of EFEPR and will shape its future. Happy birthday to you all!

Sabine Van Doorslaer
President of EFEPR

15+ Anniversary of the Society of Electron Spin Science and Technology



The Society of Electron Spin Science and Technology (SEST: Japanese ESR Society) celebrated its 15th anniversary in October 29, 2016. In addition, our society became an official general incorporated association on December 7, 2016. These milestones have been possible thanks to the cooperation of our current and existing members and colleagues. We are also very happy.

Let us look back on the history of SEST. SEST was founded on October 29, 2002, to establish a society for researchers working in different fields – such as physics, chemistry, in vivo ESR, applied measurement, etc. – to meet in order to discuss related topics. Study groups such as the Physical Society of Japan, the ESR Symposium (the Chemical Society of Japan), the Magnetic Resonance Medical Association, the Japan Free Radical Society, the in vivo ESR Symposium, and the Applied ESR Measurement Society, which had until that point been working independently, gathered together at this time to form a society organization.

The membership as of August 3, 2017 comprises 367 individual members, including 116 students, and 4 supporting sponsors (Bruker BioSpin, JEOL Resonance, Keycom, and Sumitomo Chemical). Last year's 55th SEST annual meeting (November 10–12, 2016) was held at Osaka City University, with 230 participants. This included 78 students.

As an academic society made up of ESR researchers from different fields, SEST has been working on the following aspects from its establishment. First, interdisciplinary integration is promoted. I think that SEST represents a particularly good opportunity to organize research meetings and apply for competitive funding. SEST publishes a journal, *Electronic Spin Science* (Japanese), which is issued twice a year, in spring and autumn,

by the SEST editing committee composed of editorial members from different fields. The journal was launched in autumn 2003, which is the year after the establishment of SEST, and editing of issue 29 is currently in progress. The journal consists of an introductory research review by each prize winner (SEST Award, SEST Young Investigator Award, SEST Excellent Presentation Award, SEST Excellent Poster Award), an introduction to laboratory activity from active principal investigators, an article on historical aspects from senior members, a report on participation in academic conferences abroad, including travel etc. The SEST's journal is easy to read and the content is fulfilling. I think that the journal contributes to uniting the different fields related to SEST.

Second, internationalization is promoted. As we will see later, several international conferences have been hosted by SEST so far. More recently, projects by young researchers have begun to be fostered (this will also be described later). The next president expects that collaboration, for instance between industry and universities, will be promoted in this way.

Three international conferences organized by SEST have been held to date. Many leading overseas researchers have participated in these conferences, which is a result of the strong cooperation between overseas ESR researchers.

The first international conference organized by SEST was held in Shizuoka, at the Shizuoka GRANSHIP, as a celebration of the 5th anniversary of SEST. It was held on November 6–9, 2007, the year after the 5th anniversary (2006). Prof. Hisao Murai (Shizuoka University) was chairperson of the event. (ISESS-SEST 2007, Shizuoka, Japan; 177 participants, 25 of whom came from overseas [9 countries]).

In 2011, which marked the 10th anniversary of SEST, we planned to hold a joint meeting of the second international conference and the SEST annual meeting in Sendai, with Prof. Seigo Yamauchi (Tohoku University) as the chairperson. However, as you know, on March 11, 2011, an unprecedented disaster in the form of the East Japan great earthquake occurred. Prof. Yamauchi was still devoted to holding an international conference, but decided to hold this and the SEST annual

Anniversaries

meeting separately, since participants from overseas were concerned about safety. In 2011, while also celebrating the 10th anniversary of the SEST annual meeting, an event was held to celebrate the 50th anniversary of the first ESR symposium in the field of chemistry. The 2nd international conference of SEST was held at Daikansou in Matsushima on July 23–25, 2012. As you know, Prof. Seigo Yamauchi

suddenly passed away on September 26. We lost a significant pillar of our community with his passing, and are still filled with sorrow at this loss. (ISESS-SEST 2012, Matsushima, Japan; 102 participants, 20 of whom came from overseas [6 countries]).

The third international conference, in 2014, did not mark an anniversary of SEST. In the process of APES, which was held in Japan



with Prof. Hitoshi Ohta (Kobe University) as the chairperson, we decided to take the opportunity to hold a joint conference between APES, IES, and SEST. APES was previously held at Kobe in 2001, with Prof. Asako Kawamori (Kwansei Gakuin University) as chairperson. So this time, we held APES at Nara. With the Todaiji Culture Center as the main venue, poster sessions were held at Nara Prefectural New Public Hall on November 12–16, 2014. This was the first conference of IES, and it was a very successful international conference with so many participants. I remember being very busy during the conference, because we had conducted council meetings or general meetings of the three societies every day. (APES-IES-SEST 2014, Nara, Japan; 279 participants, 84 of whom came from overseas [Overseas 21 countries]).

There is no plan to hold an international conference during the 15th anniversary of SEST, but we are planning to issue publications both in Japan and abroad. Please keep an eye out for further information.

Currently in Japan, the reduction in the population of young researchers, regardless of field, is a problem. The number of births is continuing to decline and the economy is recovering, so the number of doctoral students is drastically decreasing. In response to these circumstances, SEST actively carries out various projects to foster young researchers as follows. SEST hosts an ESR introductory seminar every year in May, and develops human resources for future ESR. The SEST Young Society, as an independent activity for young people, includes an ESR summer school held each July. In addition, in 2017 a seminar held by the SEST Young Society was launched. SEST supports each of these projects. We would also like to work closely with the IES award program and develop young ESR researchers globally.

Finally, we would like to inform you that ISMAR 2021 will be held at Osaka Grand Cube from August 22nd (Sunday) to August 27th (Friday), 2021. It will be jointly held with ISMAR, SEST, NMRSJ (the NMR society of Japan), and APNMR (the Asia Pacific NMR Society). Coincidentally, that year will be mark SEST's 20th anniversary. We expect members of IES to participate in ISMAR 2021, and are looking forward to seeing you in Japan.

Toshikazu Nakamura
President of The Society of Electron Spin
Science and Technology
(SEST: Japanese ESR Society)



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Contributor to the International EPR Society

Notes on 50 Years of the RSC ESR group



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I have been invited to give my personal recollections of some of the meetings of the ESR Group of The Royal Society of Chemistry I have been to over the past fifty years. I went to meetings right from the start until about ten years ago and I have been on the committee for several stints. It is not a factual account of the history of the Group, indeed my memory is not good enough to give all the correct facts. I apologise to anyone I have missed out with whom I have shared happy times. Also, I may have mixed up the dates of meaningful encounters. If anyone is more interested in the detailed facts, it is best to visit the RSC ESR Group website. The NMR Discussion Group also has an interesting history website (www.nmr.org.uk/History_of_the_NMR-DG/History_of_the_NMRDG.html). Let me start with a little bit of the history of magnetic resonance in Britain.

ESR research began in the UK when several groups built their own instruments: David Ingram at Southampton, Peter Ayscough at Leeds, E. E. Schneider at Durham, Jack Bencsall and Stan Clough at ICI (the latter two kindly provided me with all the detailed information I needed to build a spectrometer). However, the availability of commercial instruments in 1960 by Varian, Bruker, JEOL

and Hilger caused a surge in interest in ESR. At Liverpool, my postgraduate student, the late Tony Bullock, helped to build our ESR spectrometer and he was greatly relieved when, in 1960, a Varian ESR spectrometer (V4500) was delivered and our unbelievably-insensitive home-built instrument was ditched. Varian ceased to make instruments in the Eighties but, because of the high build quality, their instruments are still widely used. Indeed, I had a 1970 Varian E4 in regular use until I retired – it had been updated earlier with a data acquisition system supplied by Reef Morse's Scientific Software Company.

Probably the first public magnetic resonance meeting in the UK was held at the Physical Chemistry Laboratory at Oxford on 25th May 1956 – it was a one-day meeting and it was able to accommodate both electron and nuclear magnetic resonance spectroscopy! That meeting probably caused me to be interested in both ESR and NMR spectroscopies for most of the rest of my career.

At a meeting on 18th December 1968 at University College Cardiff, a Caretaker Committee was formed with Prof. W. A. Waters of Oxford as Chairman and Dr. J. C. Evans of Cardiff as Secretary/Treasurer. Prof. E. de Boer was the overseas committee member. The ESR Group decided that meetings would be international and that these would be held yearly at universities in the UK. Rather strangely, it was proposed that themes would alternate each year between Inorganic Chemistry with Biological applications and Inorganic Chemistry with Biological applications – no Physical Chemistry! This procedure was abandoned in more recent years. In February 1969, the Group became known officially as the ESR Group of the Chemical Society. About the same time, physicists formed the British Radiofrequency Group (BRSG) that covered all aspects of magnetic resonance. In 1980 the Royal Society of Chemistry was formed from The Chemical Society, the Royal Institute of Chemistry, the Faraday Society and the Society of Analytical Chemistry. Subject Groups were created and two of these were the ESR Group and the NMR Discussion Group. The latter had existed independently since 1964 before deciding to join the RSC. The RSC had

wanted magnetic resonance to be included in the newly formed Organic Chemistry Subject group. At the time, I was a Physical Chemist and Chairman of the NMR Discussion Group, and I persuaded the RSC to form an Interdisciplinary Subject Group that would accommodate the magnetic resonance groups and other spectroscopic groups.

From 1972 to 1987, the ESR Group activities were run largely by Barrie Raynor who was effectively Secretary and Treasurer and committee members were given very little to do. I was on the committee for a few spells and I compared my experiences with those I had as Chairman and committee member of the NMR Discussion Group. In the latter, we officers contributed very actively and there was regular turnover of membership. It seemed to me that the ESR Group should consider adopting a similar model so, in 1989, I drew up a draft constitution for the ESR Group and to my surprise it was adopted without much change. I believe that this constitution is still in place.

The first international meeting was held appropriately at Southampton in the Spring of 1969: David Ingram had done some groundbreaking ESR work on the structure of haemoglobin. Meetings were to be held in the Spring at universities and would start on a Sunday evening and finish at Thursday lunchtime. From the beginning, Bruker and JEOL had instrument displays and made generous financial contributions, some of which helped to fund the evening receptions. The Bruker Prize was introduced later and was to be awarded to outstanding researchers who would give an evening lecture at the meeting. The recipient was to be selected by the ESR committee – not by Bruker. The photograph shows most of the Bruker Prize recipients up to 1997. JEOL provided bursaries to graduate students to enable them to attend the annual meeting; later JEOL changed this and gave a prize to the best graduate student presentation.

The meetings were regularly attended by Dieter Schmalbein of Bruker, John Gilbert and Peter Meadows of JEOL and by Lars Anderson of Varian. Another regular attendee was Andrew Porte of Glasgow – over the years, he gave talks at the meetings, and after he retired, he still came to meetings and generously paid for a graduate student to attend a meeting. There was a period when Ffranco Williams and Martyn Symons both presented papers on free radical studies of gamma-irradiated frozen solutions. To everyone's amusement, they both argued hotly about the interpretation of each other's results. Martyn was a regular attender

and contributor right from the beginnings until his death in 2002. Meetings were often enlivened by an enthusiastic contingent from Italy, usually including Angelo Alberti and Marina Brustolon. Germany was often represented by Wolfgang Lubitz, Klaus Möbius, Harry Kurreck and Günter Grampp (later he moved to Graz in Austria). Keith Preston, John Morton and Tony Howard from NRC of Canada often came to the meetings. From the USA there were regular attendances from Sandra and Gareth Eaton, Brian Hoffman and from Ann and Philip Rieger.

Through the years, instrumental developments greatly affected the topics presented at conferences. NMR spectroscopy has led the way in most of the instrumental developments, mainly because the wider applications of NMR has made it easier to get funds. In the early days of ESR, X-band techniques predominated with a small amount of Q-band work. I think that the first superconducting magnet was built for NMR spectroscopy by Rex Richards at Oxford and later the design was incorporated into a 200 MHz PerkinElmer commercial NMR spectrometer. This led to a huge effort in developing these magnets with the vastly improved dispersion and sensitivity they provided. As fast digitisers became available along with more powerful computers, pulse methods replaced CW NMR spectroscopy. Solid-state NMR was a poor relation for some time until even faster digitisers appeared. These new developments then found their way into ESR allowing pulse techniques to be introduced. These steps forward, coupled with high fields from superconducting magnets, made it possible to do multiple frequency spectroscopy and ENDOR methods became more

accessible and versatile with pulse techniques. Observation frequencies increased from the ubiquitous 9 GHz to 360 GHz.

The conferences moved around the UK with local organisers usually being members of active research groups – an exception being the agricultural college at Cirencester. York hosted the most number of meetings: the reasons are not hard to find. Bruce Gilbert had a very active research group and York is a beautiful old city with a very attractive university campus. In addition, the evening outing was usually spent at a special opening the fascinating City museum with its very interesting displays, or at the York Viking museum or at the National Railway Museum. Each conference site has some particular attraction. Bath provides superb visits to the Roman baths and to Bath Abbey. Cardiff usually held the Conference Dinner at the castle and, on one occasion, we were treated to a medieval banquet complete with a minstrel. Another year we were able to go to the museum to see a visiting exhibition of dinosaurs from China. Manchester has a superb Conference Centre. Edinburgh could offer whisky tasting for the evening. Nottingham, Oxford, Cambridge and Lancaster, Royal Holloway College and the University of Surrey have superb campuses. Lancaster is situated near the glorious English Lake District and the local organisers of the 1997 conference arranged an afternoon cruise on beautiful Lake Windermere: I was lucky enough to spend some time on the trip with André Rassat.

The meetings that have particularly good memories for me started with the 1978 meeting at Cardiff. There are usually two poster sessions at meetings and, at one of them, I

met Prof. Attila Yildiz from Hacettepe University in Ankara, Turkey. We found that we were working on a similar problem and it was agreed that I would visit his lab with two of my co-workers who would give talks and we would also visit the Middle East Technical University in Ankara. We arrived in 1980 just as a rather alarming military coup was actually taking place. Although there was a curfew, we managed to complete our scientific business and even to see something of the wonderful country of Turkey. We were surprised to find that the head of Chemistry at Hacettepe was a woman – completely unknown in the UK at that time. Our cooperation continued and two of Prof. Yildiz's colleagues spent some time in my lab in Liverpool. One of them was a great fan of Liverpool football team but we couldn't persuade him to actually go to a match. Another connection was made with Turkish scientists was made at York in 1980 when I met Siddik Içli from Ege University, Izmir. This meeting led to an invitation to give a talk in 1986, with other contributors, to an interesting meeting in Izmir on magnetic resonance spectroscopy. The purpose was to encourage some enthusiastic Turkish graduate science students to become fluent in English. I have good memories of walking around Ephesus (my third visit!) with some of these highly-motivated students. They were a delightful group and gave me good luck charms which are still on view in our house.

At the 1982 meeting at Nottingham, some of my graduate students and I met Wolfgang Lubitz and his group of students. We had a great time socialising in the evenings and Wolfgang and I formed a lifelong friendship. The next time I met Wolfgang was later in 1982 at the Radical Ion Gordon Research Conference in Wolfboro, New England. I presented a poster on some ESR work we had been doing on chromanol cation radicals. Wolfgang suggested that ENDOR experiments would help to solve some assignment difficulties we were having and that I should spend some time in his lab at the Free University in Berlin. We were also to attempt to carry out (but failed) the first ever sulphur-33 ENDOR experiments on a persistent sulphur-33 labelled radical we had synthesised in Liverpool. I went later that year first stopping off at the Bruker labs in order to



Bruker Prize Lecturers, Oxford 2007: Neil Atherton (1993), Jack Freed (1990), Gareth Eaton, Sandra Eaton (2002), Jan Schmidt (1999), Dante Gatteschi (2000), Daniella Goldfarb (2007), Keith McLauchlan (1997), John Pilbrow (1998), Yuri Tsvetkov (2006), Jürgen Hüttermann (2001), Klaus Möbius (1987), Klaus-Peter Dinse (2005), Wolfgang Lubitz (2003)

do some ENDOR work on the chromanol radicals with Dieter Schmalbein at Karlsruhe. I had an extra bonus of meeting Klaus Möbius at the Max Planck Institute. Klaus ran a sample for me on his high-field ESR spectrometer (36 GHz?) that had a superconducting magnet. Harry Kurreck kindly showed me some of the sights in Berlin which included a visit to “Check-Point Charlie” as the Berlin Wall was still in place at that time. He kindly took me on his boat on the Wann See for a sail and a picnic; he also invited me to his house for dinner and to meet his family.

A particularly memorable conference for me was the one organised by Duncan Gillies and me at Royal Holloway College (then called the Royal Holloway and Bedford New College), University of London, in 1990. Delegates were housed in the main building, a Victorian copy of a fairy-tale French chateau while lectures were given in the modern Chemistry Department. The free afternoon could be spent at Hampton Court (Henry VIII’s royal palace), the Royal Horticultural Society Gardens at Wisley or visiting central London. The early evening outing was a boat trip on the Thames: this was at night-time so we sailed past Runnymede and Windsor Castle with twinkling lights. The conference dinner was served in the wonderful college art gallery. At the time it housed a very valuable Turner picture: it still has some masterpieces including Millais’ “The Princes in the Tower” and Frith’s “The Derby Day”. Although the Chemistry Department had a fine record of teaching in the University of London, it was to close a few months later and Duncan and I had to move our research group and spectrometers to the nearby University of Surrey. We



were made very welcome by Prof. John Jones at Surrey but it took us nearly six months to get our refurbished lab commissioned and all our spectrometers operational again.

Following on from this, Duncan Gillies and I were local representatives for the 1995 ESR conference at Surrey. As I was due to leave Surrey and move to the Institute of Food Research in Norwich, Duncan, Jim Feeney* and Jim Emsley* decided to mark my departure, and my 40 years of research in magnetic resonance, by holding the “L. H. Sutcliffe Symposium on Magnetic Resonance”. This was to take place on the Friday before the ESR Group meeting so that people from overseas could attend both meetings. I was invited to choose speakers, with whom I had been associated, from both ESR and NMR disciplines. The morning session was chaired by Prof. Alwyn Davies, Chairman of the ESR Group, and the afternoon session was chaired by Prof. John Lindon, Chairman

* Co-authors of our book “High Resolution Nuclear Magnetic Resonance Spectroscopy” (1965) and co-founders of our review series “Progress in Nuclear Magnetic Resonance Spectroscopy” (1966).

of the NMR Discussion Group. My wife, Shirley Fairhurst, and I welcomed Reef Morse, Tony Howard, Margaret and John Morton, Pam and Keith Preston to stay our house until the start of the ESR Group conference. There were about 90 people at my meeting – I was delighted that some of my past graduate students turned up. One of them I hadn’t seen for nearly 40 years! It was a very happy occasion and we extended it by having an open invitation to our house for a party on the Saturday evening. The RSC ESR Group meeting, which started on the Sunday was an interesting one.

One of the talks was given by John Maher who informed us of the arrival of the World Wide Web: at the time it was thought that it might be a useful repository for spectra, but clearly this has not happened. The evening outing was to the impressive Denbies vineyard at nearby Dorking. An entertaining and informative account of the history of the enterprise was followed by a modest wine tasting.

The 2000 meeting was held in Norwich at the world-famous John Innes Centre and delegates stayed in students’ halls of residence on the nearby University of East Anglia campus. The usual free afternoon enabled people to make a self-guided tour of the mediaeval parts of Norwich or to take a boat trip with me on the Norfolk Broads. The conference dinner took place in the historic Blackfriars’ Hall in the centre of Norwich. The Blackfriars came to Norwich in the 13th century and the hall was built in the 14th century. It, along with connected St. Andrews Hall (where we had drinks before dinner), displays a very large collection of civic portraits.

Of course, the meetings of especial interest to me are those Chaired by my wife Shirley. ►

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She was Chairman from 2005 to 2007, when conferences were held at Bath (2005), Edinburgh (2006) and Oxford (2007) respectively. She is the first woman to be Chairman of the Group and still is the only one to have held the office. At the Edinburgh conference, Gunnar Jeschke paid tribute to the highly-talented Arthur Schweiger following his untimely death at the age of 59. The Oxford meeting of 2007 was of particular interest to me. It was a special meeting to which all past Bruker Prize winners were invited to give short talk on their recent work. It was also the 40th anniversary of the group: as a result it was twice the usual size and the Dyson Perrins lecture theatre was filled to overflowing. Laila Mosina came to stay with us before the meeting and we were able to show her some of the interesting sites in and around Norwich. Delegates were housed in the historic and beautiful New College (founded in 1379!). The highlight for me was being made Fellow of the International EPR (ESR) Society: I was greatly pleased that the certificate was presented to me by my old friend Wolfgang Lubitz who was President of the IES at the time.

In 2008, the conference was held at University College, London. As we gathered for each session we were greeted in the foyer, rather bizarrely, by the auto-icon of Jeremy Bentham. Bentham was born in 1747 and died in 1832. He was a philosopher and great social reformer and he helped to found the University of London. He requested that after his death that an auto-icon be placed in University College (founded in 1826). This was done in modified form – his skeleton was packed with straw and fitted with some of his clothes. His head has been replaced with a



wax copy. The College is in central London and that gave us the opportunity of spending some time in the nearby British Museum.

The Conference Dinner is an important part of the proceedings. New and old friendships can be enjoyed. The location can vary from being on and off site. In 1996 at Edinburgh, our then Chairman, Chris Rhodes chose the delights of wine drinking for the topic of his after dinner speech – despite the importance of whisky in Scotland and his own liking for the drink. At the Bristol meeting in 2001, we were entertained with Morris dancers at the end of the meal. In 2002, Sandra and Gareth Eaton received the Bruker Prize at Aberdeen: they had the distinction of being marched in to Dinner accompanied by a bagpiper. The 1984 Cambridge conference housed us in Pembroke College and this led to a hilarious situation. A sumptuous dinner was given at Jesus College with wine with every course, so at the end of the evening most of us were a bit worse for wear. We all made our way back to Pembroke only to find that the gatehouse was locked and that there was no one to let us in. Fortunately, we had a Pembroke man in our group who remembered how, as a student,

he got in after a late night out. This involved climbing a 3-metre high wall with a shed at the other side. With about 100 people to get in, this was no easy task. Neil Atherton sat astride the wall and gallantly helped the ladies in our party, in all their finery, to get on to the shed roof. There could have been a disaster because, when Bob Bray got to the top of the wall he fell off and cut his head rather badly. Luckily, next morning at breakfast, he was smiling and all the rest of us had sore heads!

My final attendance was at the University of East Anglia, Norwich meeting of 2009 and the

photograph shows how I was enjoying the evening I spent at the conference dinner in the company of Laila. A great feature of the Conferences is a lively social programme that helps to foster friendships and collaborations.

What one learns from attending scientific conferences of the size of about 100 of the ESR Group is that there is a wonderful opportunity to learn a great deal, to develop very fruitful collaborations and to make lasting friendships. These friendships are strengthened further when attending meetings of other organisations featuring ESR spectroscopy.

What am I doing now? As an experimentalist I certainly miss being able to work in a well-equipped lab with talented colleagues and enthusiastic and highly-skilled technicians. However, it gives me a lot of pleasure to see how well some of my ex-students are doing but some have even retired! Instrumental developments continue apace and it is gratifying to see how some magnetic resonance techniques, like MRI, have been of such enormous benefit to mankind. On the social side, Shirley and I still travel widely and we have visited about 40 countries so far.

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IX Voevodsky Conference "Physics and Chemistry of Elementary Chemical Processes"

June 25–30, 2017, Novosibirsk
Akademgorodok, Russia

The IX Voevodsky Conference "Physics and Chemistry of Elementary Chemical Processes" was held from 25th to 30th of June, 2017 in Novosibirsk Akademgorodok (Russia). The first Voevodsky Conference was organized in 1977, in honour of Academician V. V. Voevodsky's contribution to various areas of chemical physics and his role in the development of physical methods in chemistry. The Conference has become a tradition and is held every five years alternatively in Moscow and in Novosibirsk, the two scientific homelands of V. V. Voevodsky.

This year we celebrated the 100th anniversary of V. V. Voevodsky, and the regular scientific meeting was bound to be a little bit special. Probably the best tribute to a scientist is to further develop the original ideas and see them live on in new generations of researchers already active and yet to come. V. V. Voevodsky was one of the most active proponents of physical revolution in chemistry, bringing to the forefront the elementary act of a chemical process, the single electron transferred and the single spin flipped to make the reaction happen, and almost any modern study in chemical physics or physical chemistry would be a fair homage to his legacy. The Conference topics did reflect this breadth of scope, and covered Chemical radiospectroscopy, Elementary stages of chemical and biochemical reactions, Magnetic and spin effects in chemistry, biology and material science, Electron transfer in chemistry and biology, Reactivity of excited states and intermediates, Chemical intermediates in combustion, Interphase

chemical reactions, and Computational and theoretical physical chemistry.

The Conference brought together 176 participants from 12 countries and 10 major research centers in Russia, including 71 young researchers and students. The feast of science continued for five full days, which were spanned by 11 Plenary sessions, 12 Oral sessions, and a very successful Poster session, a beehive of mostly younger researchers that buzzed well into the Conference Dinner. Altogether 39 Plenary, 46 Oral, and 78 Poster contributions were presented and discussed. The well-attended sessions were hosted by three venues, the Voevodsky Institute of Chemical Kinetics and Combustion, International Tomography Center, and Novosibirsk State University, who, together with the Siberian Branch of the Russian Academy of Sciences, organized the event. The Conference was financially supported by the Russian Foundation for Basic Research (RFBR) and the Federal Agency for Scientific Organizations (FASO Russia).

As has become a tradition, the scientific program of the Conference mostly centered on the theory and applications of EPR and NMR, however, this time a deliberate effort was taken to bring in adjacent fields as well, most notably photochemistry, catalysis, and material science, and exemplify the deep connections that modern radiospectroscopy as a tool has to its neighbors in chemical physics and physical biology. To provide just a glimpse on this diversity, the talks by Geoffrey Bodenhausen on "Dynamic Nuclear Polarization coupled with rapid Dissolution" and Igor Koptiyug on "Parahydrogen-based signal enhancement in NMR and MRI" ran hand in hand with reports by Oleg Martyanov on the "Development and application of EPR methods to study the structure and evolu-

tion of multicomponent catalytic systems in situ including sub and supercritical fluids" and Gerd Kothe on "Creating a multitude of entangled nuclear spin qubits in hyperpolarized molecular solids", while Robert Griffin's experimental story on " β -Amyloid, sub-terahertz microwaves, and the magic angle" and Matvey Fedin's tale of the "EPR study of MOF-based functional systems" were balanced with deep theoretical insights from Edward Fel'dman on the "Investigations of quantum correlations and decoherence of quantum states with magnetometry and methods of magnetic resonance" and Fridrikh Dzheparov on the "Basic processes of spin dynamics in disordered solids and magnetic resonance and relaxation of polarized beta-active nuclei".

A very important part and mission of this Conference certainly was the ceremony of awarding the Voevodsky Prize for 2017. The Prize was established in the memory of Academician V. V. Voevodsky in 1997 by the V. V. Voevodsky Institute of Chemical Kinetics and Combustion and the International Tomography Center of the Siberian Branch of the Russian Academy of Sciences, and is awarded once in two years to Russian and foreign scientists, in turn, for outstanding contributions to investigation of the kinetics and mechanisms of chemical reactions, structure and properties of active intermediates, elementary acts in photo- and radiation chemistry using radiospectroscopy techniques. This year, to celebrate the 100th anniversary of V. V. Voevodsky, two prizes were awarded together. The laureates for 2017, selected by the international award committee, are Professor Jack Freed, "For outstanding contribution to the theory and practice of chemical radiospectroscopy based on innovation of new pulsed ESR methods", and Academician Renad Zinnurovich Sagdeev, "For outstanding





Jack H. Freed delivers his 2017 Voevodsky Prize lecture



Renad Z. Sagdeev, 2017 Voevodsky Prize Winner (right) and Victor A. Bagryansky (left)

contribution to spin chemistry development and research of molecular magnets". Both awardees certainly need no further introduction in the EPR/NMR community. It must be rather symbolic that by the year 2017 the circle of the Voevodsky Prize winners has reached 12: Anatoly Buchachenko, Arnold Hoff, Lev Blumenfeld, Leonid Volodarsky, Klaus Möbius, Yuri Tsvetkov, Gertz Likhtenshtein, Yuri Molin, Robert Kaptein, Kev Salikhov, Jack Freed, Renad Sagdeev. The Conference was attended by the daughter of V. V. Voevodsky, Marianna Voevodskaya, who had been most active in its organization, and featured a special evening in the memory of Aca-



demician Voevodsky, at which people shared their stories and recollections of this exceptional personality.

The Organizing Committee hopes that the IX Voevodsky Conference was a fruitful and enjoyable scientific event. Those who missed it, but would like to learn more about the meeting and download the Book of Abstracts, are welcome

to visit the Conference site at www.kinetics.nsc.ru/vvv100. Of course, it would be better still to come to Novosibirsk in person, for a future Voevodsky Conference, with a working visit, or just to enjoy the beautiful Siberian nature. Just be careful to choose the time correctly: it may be cold in winter here, but it may also be sizzling hot in summer.

Victor A. Bagryansky, Co-chairperson,
Dmitri V. Stass, Scientific Secretary,
Vladimir N. Simonenko,
Photographer

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Conference reports

International Conference on Electron Paramagnetic Resonance Spectroscopy and Imaging of Biological Systems July 16–22, 2017, Morgantown, West Virginia, USA

This summer the newly founded In vivo Multifunctional Magnetic Resonance Imaging Center (IMMR) at West Virginia University hosted the EPR2017 Conference, chaired by the center's director Prof. V. Khramtsov. It was a combined meeting of the 16th In Vivo EPR Spectroscopy and Imaging Conference and the 13th Spin Trapping / Spin Labeling conference.

This memorable event took place at the Lakeview Golf Resort and Conference center in Morgantown, WV.

Over 120 participants from 12 countries shared their latest results and ideas about EPR and spin-probe development, instrumentation, applications, and clinical trials. 58 presentations were given by leading scientists from the biggest EPR laboratories and centers in the world. The organizers were excited to see that over a quarter of participants were graduate students and young investigators.

Conference mornings began with special lectures from the Mountaineer EPR School. Complete reviews covering EPR history, instrumentation, spin-probes, clinical and pre-clinical applications, and Overhauser MRI were presented by specialists and published in the Mountaineer EPR study book. Not only EPR beginners were interested, there was something to learn for even the most experienced EPR scientists!

One afternoon was dedicated to tours of the IMMR laboratories and the animal facility at the WVU Health Sciences Center. Dr.



Driesschaert presented a locally-built flow-chemistry system for the automatic synthesis of multifunctional EPR probes. Dr. Bobko demonstrated commercially available MRI and EPR based spectrometers and imagers for chemical and biomedical applications. Dr. Tseytlin presented a homebuilt rapid-scan pre-clinical EPR imager operating at 800 MHz. Visitors also got to see demonstrations of commercial clinical EPR by ClynEPR and the EPR-based "Vitality & NO-Bioavailability Tests" by Noxygen.

During the conference, a team of independent judges chose recipients of the Young Investigator Awards. Prizes for best oral talk were awarded to Jason Sidabras (Max Planck Institute, Germany) and Reza Dastvan (Vanderbilt University, USA). Awards for best poster were given to Kayla Steinberger (WVU, USA) and Melanie Chestnut (North Carolina State University, USA), chosen from the 48 presented. The outstanding instrumental work of engineers Maciej Kmiec and Sergey Petryakov from Dartmouth, USA was recog-

nized with special certificates. An important role in conference organization was played by the International EPR Society, and its director Dr. Hitoshi Ohta presented unique awards to two young scientists Urikhan Sanzhaeva (Moscow State University, Russia) and Benjamin Nforneh (Emory University, USA).

The comfortable environment provided by the organizers stimulated not only discussions of current results and the creation of new collaborations, but also good opportunities for relaxation. A tour and picnic at the colorful Coopers Rock State Park let participants enjoy scenic views and climbing experiences in "wild and wonderful" West Virginia. Some participants also enjoyed fine dining in downtown Morgantown and golf at the resort.

The productive conference was capped off with an award ceremony and banquet, where Health Sciences Center director Dr. Clay Marsh expressed his special greetings and Biochemistry department chair Dr. Mike Schaller emphasized the significance of the event to science development and recognition



Group photo

at WVU. The evening was embellished with delicious food and a vivid performance from a local bluegrass band. A round-table meeting was also organized to discuss the possibility of future conferences in 2019 at Krakow and in 2021 at Paris.

The Organizing Committee expresses gratitude to the Bruker, Magnettech, Japan RE-DOX, NOXYGEN, and Avanti companies

for providing support and making it possible to have conference awards, refreshments at the poster session, limousine service to and from airports, and a banquet with live entertainment. Special appreciation also goes to the National Institute for Occupational Safety and Health, the West Virginia Clinical and Translational Institute, and the WVU Health Sciences Center for their enormous support.

Looking back on the event, I would like to cite the opinion of one conference participant: "The meeting and the organization was second to none. Congratulations!! Thanks again for a very enjoyable meeting."

Oxana Tseitlin
Secretary EPR2017

The 59th Annual Meeting of the Rocky Mountain Conference on Magnetic Resonance

July 23–28, 2017, Quebec City, Canada

The 59th annual meeting of the Rocky Mountain Conference on Magnetic Resonance (RMCMR) and 40th International EPR Symposium were held in conjunction with the 20th meeting of the International Society of Magnetic Resonance (ISMAR) in Quebec City, Canada, July 23–28, 2017. The EPR portion of the meeting consisted of 25 invited and 31 contributed talks along with 56 poster presentations. When combined, the EPR community accounted for about 30% of the conference attendees!

In addition to the above contributions, the meeting featured three plenary lectures with an EPR focus. The first, given by Enrica Bordignon (Ruhr University), focused on the application of site-directed spin labeling to the study of protein conformation and hydration for a light-driven phycobilin, the ABC-transporter system and Bcl-2 proteins associated with cell death. Daniella Goldfarb (Weizmann Institute), winner of the IES Gold Medal for 2017, focused her plenary lecture on the development of sensitive methods for performing distance measurements using high field-high frequency EPR spectroscopy. Finally, Song-I Han (UC Santa Barbara) presented work on the development of a 200 GHz spectrometer capable of performing Dynamic Nuclear Polarization NMR, and cw- and pulsed EPR for applications over a broad range of temperatures.

The meeting featured 17 EPR sessions that were organized by Christoph Boehme (Utah), Ania Bleszynski-Jayich (UC Santa Barbara), Howard Halpern (U Chicago), Fraser MacMillan (U East Anglia), Stefan Stoll (U Washington), and Susumu Takahashi (U Southern California). Unfortunately, these sessions were often run in parallel so conference participants were forced to make difficult decisions regarding which talks to

attend! Two combined IES sessions were held Thursday afternoon and featured lectures given by several of our 2017 IES award winners. Gunnar Jeschke (ETH Zurich), 2017 Silver Medal for Instrumentation, presented methodology developed in his laboratory using shaped pulses. Shi Fazhan (USTC Hefei), IES Young Investigator Award, described his work on single molecule spectroscopy and nanoscale imaging. Jack Freed (Cornell U) and Betty Gaffney (Florida State) were also honored for being named IES Fellows. IES

Poster awards were presented to Alina Motygullina of the University of Queensland for her poster entitled, "Computational Modeling for Identifying Protein Structure using DEER Data and Molecular Dynamics Simulation", and Hoang Long Nguyen of Cornell University for his poster entitled, "Protocols for Imaging Individual Nitroxide Electron Spins with Atomic Precision".

Special thanks are due to RMC Executive Committee members, Sandra Eaton (U Denver) and Kurt Zilm (Yale U), for their work with the ISMAR executive committee and the ISMAR 2017 local organizing committee to establish a framework for the joint meeting that made organizing the EPR portion straightforward. Strong representation from both the EPR and NMR communities made ISMAR 2017 a rich scientific experience. The Rocky Mountain Conference will return to the mountains next summer as we will meet at the Snowbird Resort & Conference Center, Snowbird, Utah, July 22–26, 2018.

Submitted by John McCracken
Chair, 2017 Rocky Mountain Conference
on Magnetic Resonance



Chateau Frontenac – Quebec City, Canada



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POSITIONS

Postdoc position: silicon and germanium nanostructures for nanoelectronics and spintronics

Department of Materials Science, University of Milano Bicocca, Milano Italy, Prof. Marco Fanciulli Group

A post-doctoral position in experimental semiconductor physics and in particular on the production and characterization of silicon and germanium nanostructures for nanoelectronics and spintronics is available in the group of Prof. Marco Fanciulli at the Department of Materials Science, University of Milano Bicocca, Milano, Italy.

Minimum requirements include a Ph.D. in physics or equivalent field such as material science or electrical engineering. The candidate should have research expertise at least in one of the following fields: low temperature quantum transport, nano-fabrication, electron spin resonance, ferromagnetic resonance, and electrical characterization (IV, CV, DLTS, IETS,...).

The position is for 2 years with the possibility for further extension.

Applicants should submit a letter of application and a curriculum vitae to Prof. Marco Fanciulli marco.fanciulli@unimib.it.

Assistant Professor in Experimental Magnetic Resonance

As part of a major faculty hiring initiative, the Department of Chemistry at the University of Florida (www.chem.ufl.edu) seeks a full-time, nine-month, tenure-track appointment at the level of Assistant Professor, in the general area of magnetic resonance, broadly defined, to begin August 16, 2018. The successful applicant will join over 40 Faculty in the Department, which is home to the Quantum Theory Project and the Butler Polymer Research Center. The Department has recently opened the Joseph Hernandez Hall, a state-of-the-art teaching and research facility.

Numerous opportunities exist for collaboration across the UF campus and the National High Magnetic Field Laboratory (NHMFL) and the Advanced Magnetic Resonance Imaging and Spectroscopy (AMRIS) Facility. The new faculty member will be expected to develop a successful research program that utilizes or develops magnetic resonance methodology, preferably with applications at high magnetic fields.

<http://explore.jobs.ufl.edu/cw/en-us/job/505531/assistant-professor-in-experimental-magnetic-resonance>

Available Postdoctoral Research Position

A postdoctoral position in bioinorganic chemistry is available for a skilled and enthusiastic candidate within the Lucas Lab at Virginia Commonwealth University in Richmond, VA (<http://chemistry.vcu.edu/bios/heather-lucas>). The principal research topic will be centered around the employment of electron paramagnetic resonance spectroscopy (EPR) towards the investigation of cellular metal speciation, metalloproteins, coordination complexes, and associated redox mechanisms.

Minimum qualifications include a Ph.D. in Chemistry, Biophysics, or a related discipline. The ideal candidate will have expertise in the collection and analysis of EPR (or ESR) spectra. Prior experience with the application of spin probes and/or spin labels is desirable. The selected candidate will also be provided with opportunities to learn new biochemical and/or synthetic characterization techniques. Applications from candidates with experience in other advanced methodologies, such as resonance Raman (rR) spectroscopy or laser induced photochemical processes are also encouraged. The appointment is for one year with renewal dependent on performance; shorter contracts will be considered under special circumstances.

To apply, please send your curriculum vitae, a cover letter describing your experience, and

the names and contact information of two references to hrlucas@vcu.edu. Candidates available to start by January 2018 or earlier will be given primary consideration; however, a later start date can be negotiated. The initial contract will be supported through existing NIH grant funds; opportunities will also be provided to the selected candidate to apply for external funding to further aid in their career development.

VCU has a large interdisciplinary research community with well-equipped instrumentation facilities as well as multiple career development opportunities for postdoctoral scholars; more info can be found at www.research.vcu.edu/postdoc/index.htm. Richmond, Virginia is also a vibrant, growing place to live with a vast history, great places to eat, wonderful museums, and unique outdoor places to visit.

Post-doctoral research associate

We are looking for post-doctoral associates interested in measurement/instrumentation development of EPR spectroscopy applied to energy and biologically-derived nanomaterials to join us at the Center for Nanoscale Science & Technology (<http://cnst.nist.gov>) at NIST, a highly interdisciplinary and very well resourced user facility. My laboratory contains a Bruker E580 EPR spectrometer (X-band) as well as a NIST-designed spectrometer (Q-band), both of which are equipped with arbitrary waveform generators for pulse-shaping. UV and visible CW lasers have been interfaced with the instruments to enable photoexcitation of samples. Current work is in the areas of spectroelectrochemical EPR spectroscopy development for solid catalyst materials and nanoscale structural measurements of biomaterials, including DNA-based nanomaterials. The ideal candidate would lead a project that makes use of the CNST nanofabrication capabilities as a means to provide meaningful EPR-based measurements. Typical successful applicants have a strong research background



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e-mail: veronika.szalai@nist.gov

Research Specialist Senior Position at West Virginia University

The Department of Biochemistry is searching for a Research Specialist Senior, with a strong background in RF/MW engineering experience. This position is available immediately and will be in the In Vivo EPR Multifunctional Magnetic Resonance center, Department of Biochemistry, Health Sciences Center, West Virginia University in Morgantown, WV. The selected candidate will assist Dr. Tseytlin in designing and manufacturing electron paramagnetic resonance (EPR) spectrometers and imagers. The position will be for one year in length, with a possibility of extension. The duties and responsibilities for this position are: designing, manufacturing, assembling, and experimental testing of EPR spectrometers and imagers. Applicants must hold a minimum of Master's Degree (or foreign equivalents) in Electrical Engineering, Physics or a related field and two years of experience, or a combination of education and experience. Qualifications must be met by time of appointment. All interested, qualified candidates should apply to jobs.wvu.edu with a cover letter of interest and current CV.

West Virginia University is an Equal Opportunity/Affirmative Action Employer and the recipient of an NSF ADVANCE award for gender equity. The University values diversity among its faculty, staff and students, and invites applications from all qualified individuals, including minorities, females, individuals with disabilities and veterans.

Postdoctoral Associateships in Magnetism at NIST

We offer postdoctoral opportunities in magnetism at the National Institute of Standards and Technology in Boulder, Colorado, USA. Annual

salary is \$65,600 plus benefits. Appointments are for two years. Application deadlines are 1 February and 1 August annually (but inquire earlier).

The application process is competitive. Typical successful applicants have a strong research background and academic record. Letters of reference and an original research proposal are required.

U.S. citizenship and a background investigation are required (no exceptions).

www.nist.gov/pml/electromagnetics/magnetism

EPR Specialist Position at Johns Hopkins

Postdoctoral or specialist (staff) position is available immediately to study membrane proteins at the Johns Hopkins University School of Medicine in Baltimore, Maryland, USA. We study conserved membrane enzymes with implications for human health (see *Nature Chem Biol* 8:759, *eLife* 1:e00173, and *Nature Rev Micro* 7:411), and are generously funded by the National Institutes of Health (NIH) and the Howard Hughes Medical Institute (HHMI). The project uses site-directed spin labeling (SDSL) with nitroxide probes to study the dynamics, distance measurements, and saturation kinetics with CW-EPR methods. The applicant must have at least 3 years of prior experience in SDSL, EPR, spectrum simulations, and distance measurements as evidenced by publications. Experience with membrane proteins is preferred but not essential. Position will come with generous salary and benefits, depending on experience and record of achievement. Interested applicants please send detailed CV and contact information for 3 references to rosanna@jhmi.edu.

EQUIPMENT

Wanted: Badly needed certain parts of, or even a complete Bruker X-Band microwave unit from the mid-seventies, the one which came with the Bruker B-ER 420 system. Particularly,

the klystron heating and protection board, B-E-Z 10. Please contact Prof. Dr. Wolfgang E. Trommer, Department of Chemistry, TU Kaiserslautern, P.O.Box 3049, D-67653 Kaiserslautern, Germany. E-mail: trommer@chemie.uni-kl.de.

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Please contact: Richard W. Quine, e-mail: rquine@du.edu, phone: 1-303-871-2419

Available: Used Varian EPR equipment

(1) Varian E-104 EPR spectrometer with vertical style bridge and e-line fieldial. (2) Varian E-9 EPR spectrometer. Both available with warranty and continued service support. (3) Varian TM cavity with flat cell holders and flat cells. (4) Varian E-257 variable temperature controller with heater sensor and insert holder. (5) Varian E-272B field/frequency lock accessory.

Please contact: James Anderson, Research Specialties, 1030 S. Main St., Cedar Grove, WI 53013, USA. phone/fax: 1-920-668-9905, e-mail: janderson36@wi.rr.com

Erratum: 2016 Ulderico Segre Prize by George Cutsail. *EPR newsletter* 27/1-2 (2017) pp. 5, 6.

The name of Professor Ulderico Segre was misspelled. It should read: p. 1, contents: "5 2016 Ulderico Segre Prize"; p. 5, title: "2016 Ulderico Segre Prize"; p. 5, beginning of the first paragraph: "I am honored to be awarded the 2016 Segre Prize for excellent PhD work in the field of advanced EPR Spectroscopy from the Gruppo Italiano di Risonanza di Spin Elettronico. I thank the Segre family for their generous support of this prize in memory of Prof. Ulderico Segre."

Erratum: Looking Backward – How EPR research was done 65 years ago by Harvey A. Buckmaster. *EPR newsletter* 27/3 (2017) pp. 10–14. The sentence on p. 10, third column, lines 25–28 top should read: "... This was necessary as my parents could not afford to send me to university although my mother tried to send me \$10 every month for spending money." The sentence on p. 10, third column, lines 34–38 top should read: "... After graduating with my BSc in the spring of 1950, I spent the summer working at the Canadian atomic energy laboratory located at Chalk River, ON."

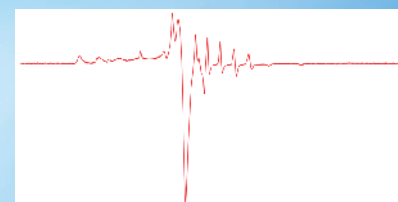
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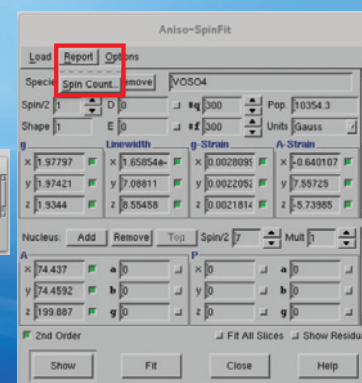
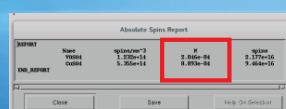
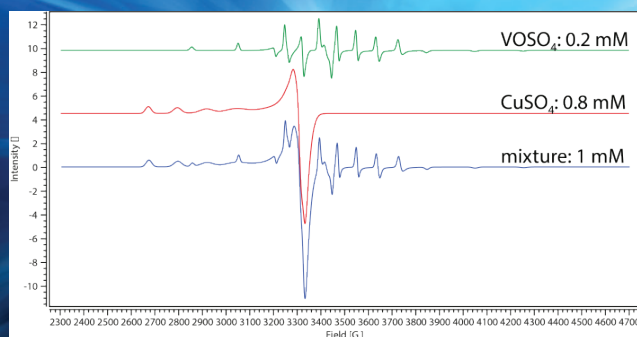
Powder, Glass, and Frozen
Solution Samples



Experimental Spectrum



Answer

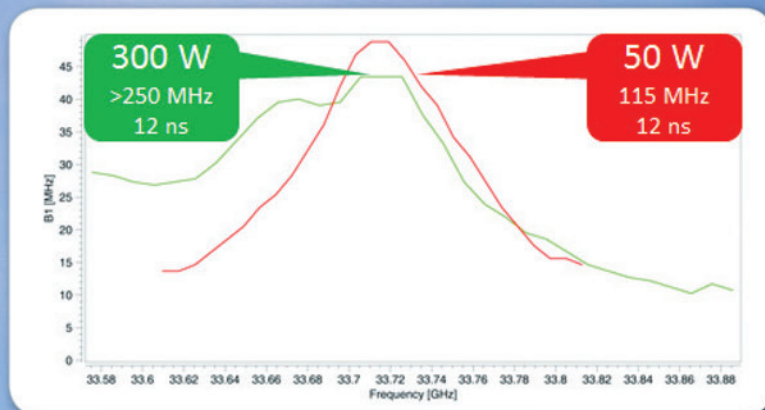


- Anisotropic g and hyperfine interactions with strain
- Zero field splitting
- Selective simulation and fitting using qualifiers

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- Multiple species simulation and fitting
- Integration with SpinCount for direct concentration analysis
- Library of common samples
- Standard with Xepr and Xenon

New Q-band Power Options!



	Solid State		TWT
Power	10 W	50 W	300 W
Resonator	Q D - 2		Q T - 2
Bandwidth	60 MHz	115 MHz	> 250 MHz
π	30ns	12 ns	12 ns

The Right Choice for the Best Results

With Bruker's recent innovations in Q-band amplifiers, a broad range of experiments are now available with improved performance.

- High Q-factor ENDOR experiments with the QD-2 (10 – 50 W)
- High B1 experiments for ESEEM at Q-band with the QT-2 and QD-2 (50 – 300 W)
- High bandwidth and sample volume for DEER with the QT-2 (300 W)

In cooperation with Songi Han, UCSB

Discover more at www.bruker.com/epr