

meeting reports from the BEMS (from different perspectives: biological, medical, and technical) will present this year's results. At first we were inclined to make one report out of four in order to avoid reruns, but ultimately we decided to keep all four reports as they were reflecting different views for the benefit of the reader. Non-attendees really missed something: Québec, the city where the meeting was held, has its architectural attractions and is surrounded by a delightful scenery.

And, finally, the rapporteur rapport on the Dresden workshop „Physical effects of pulsed RF fields at Microscopic and Molecular Dimensions“ has been finished after ample discussion among those involved, which has been necessary in order to reach a general consensus.

Apart from the column „News from Science“, the newsletter contains some other contributions dealing with interesting topics:

- a congress in Cologne dealt with the effects of light on human everyday life and physical well-being
- for many years, a study performed (by Repacholi) in a small laboratory animal (PIM1 mouse) has caused a lot of stir in the scientific community; now the first replication study has been presented (Utteridge) – but read for yourself.

At last, I would like to thank all active members on behalf of the Board of Chairs, of the Chairs of the working groups, the administrative office, and personally, too, for their work, their support, and all other favors. I wish you all a happy and restful holiday.

And, of course, I wish you a happy, a healthy and successful 2003, too!

Sincerely, Gerd Friedrich

In September 2002, the Research Association for Radio Applications had a lot to celebrate: On September 1, 1992, the Research Association was founded as a non-profit organisation, on the initiative of the Federal Ministry of Post and Telecommunications. On this occasion, the Research Association held a scientific symposium at the Astron Hotel in Berlin (September 19, 2002). In the evening, participants were invited to join a reception taking place at the Museum of Communications.



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The Research Association for Radio Application was founded ten years ago with the purpose to objectify public discussion on effects of electromagnetic waves on humans and environment. Since then, due to its objectives, the Research Association commissions scientific institutions to do research projects, provides information on research results and social and political issues to the public, and organises and/or participates in international conferences and colloquia.

The scientific symposium in Berlin aimed to provide an overview of to-date available research results and, apart from that, to present generally understandable information on the current state of international research in this field.

In his speech, Prof. Roland Glaser from the Institute of Biology, Humboldt University Berlin, gave a historical overview



Years ation for Radio Applications

pointing to the fact that effects of electromagnetic fields on biological systems have been scientifically examined since the thirties of the last century. He focused on the socio-political and theoretical dimensions of the topic 'electrosmog' emphasizing that it is generally impossible to prove that a given phenomenon is non-existing. Considering that numerous experiments related to this issue were performed which did not provide final evidence for health-detrimentous effects of weak HF-fields, we may assume that such fields are harmless, but cannot be certain.

In the 2nd lecture of the symposium, Prof. Rainer Meyer of the Physiological Institute II of the Universitätsklinikum Bonn, summarised experiments examining effects of electromagnetic fields 'in vitro' (i.e. in a test tube) on tissue, isolated cells or parts of cells. The aim was to find potential in-





teraction mechanisms in the cell nucleus, in the cell plasma, as well as in the cell membrane. Though numerous *in vitro* experiments have been performed, to date no replicable effect of weak HF-fields on cell systems could be identified.

Next, Dr. Jochen Buschmann of the Fraunhofer Institute for Toxicology and Aerosol Research, Hannover, spoke on the vast amount of research that has been undertaken on the issue of long-term effects of high-frequency electromagnetic fields in animals ('*in vivo*' experiments). Results in this area often are highly inconsistent. Nevertheless, we may safely conclude that established effects regarding teratogenicity (causing malformations) and fertility obviously are thermal, and that the occurrence of non-thermal effects as may occur below valid limit values, is highly improbable. Regarding carcinogenicity (cancer initiation), there is even more controversy, though the majority of studies here, too, supports the conclusion that health hazards for humans caused by possible non-thermal effects can be excluded.

Also, Dr. Buschmann explained that, in general, there are two different approaches for examining effects on HF-fields on humans and animals: On the one side, there is an 'academic' approach based upon a hypothesized interaction mechanism and seeking to prove or to disprove this hypothesis. Especially in the case of negative outcomes, this method makes it difficult to assess overall health risk for humans.

On the other side, there is a pragmatic, 'toxicological' approach mainly concerned with global risk assessment by, for example, exposing groups of test animals to different field strengths, and examining as many potentially health-relevant parameters as possible from which dose-effect relations are derived. Though results

of this second approach can be quite easily be applied to humans, it does not allow final conclusions to be drawn on possible interaction mechanisms.

In Dr. Buschmann's opinion, by promoting a dialogue between these two research schools ("ivory tower" versus "craftsmen") a huge potential for synergies would be activated; in his view, the Research Association for Radio Applications also in future will play a significant role as a mediator between these two groups.

In his lecture, Dr. Joachim Streckert of the Chair of Theoretical Electrical Engineering, Bergische Universität/Gesamthochschule Wuppertal, addressed the general requirements having to be met by technical facilities examining effects of high-frequency electromagnetic fields on biological systems in order to achieve scientifically accurate studies. He emphasized that in the field of „electromagnetic environmental compatibility“ a interdisciplinary approach is needed making use of the „strengths“ of the different cooperating scientific fields. The more complex the experiment, the more necessary this interdisciplinary cooperation would be.

On the whole, the scientific symposium provided a good basis for obtaining comprehensive information on state-of-the-art research related to the topic 'electrosmog'. The question whether radiation emitted by mobile radio at the level of valid limit values is health damaging or not, may best be answered by what Prof. Glaser said on this: „One thing, though, we know for certain: Effects of electromagnetic fields on human health cannot be huge compared with other environmental noxes humans are exposed to in our technical era, if existing at all. Otherwise they would have long since been proved.“

Following the scientific symposium, the above mentioned festive event took place

at the Museum of Communications. In their opening addresses, the Federal Minister of Economy and Technology, Dr. Werner Müller, and the Chair of the Research Association for Radio Applications, Eike Bär, acknowledged the work done so far by the Association. Both emphasized the importance of taking part in the discussion about possible health effects, especially regarding an economically as important technology as mobile radio is today. Both also underlined that the Research Association plays an important part in leading this discussion on a scientifically reliable basis.

In this context, Eike Bär pointed to the fact that the Research Association since its beginnings has spent 11.3 million Euro for research projects and studies maintaining high standards of scientific qualification and reputation of applicants. Moreover, he mentioned that the number of members of the Research Association has increased from, at the start, 16 to nowadays 54 members, among them network operators, universities, authorities and manufacturers of the mobile phone sector.

Huge posters put up in the foyer of the Museum of Communications showed the organisational structure of the Research Association, its research strategies, as well as some of the projects initiated by the Association. Thus, guests of the reception had the chance to obtain further information on the activities of the Research Association. These posters, as well as the lectures held during the scientific symposium, the opening addresses of the guests of honor, and other information can be found in the Festschrift published by the Research Association on the occasion of its 10-year anniversary (see www.fgf.de).

The entertaining part of the evening was taken care of by numerous artists and acrobats. The culinary treats prepared for the guests went down very well, too. ■

