

International Fröhlich's Symposium

**BIOPHYSICAL ASPECTS OF CANCER
ELECTROMAGNETIC MECHANISMS**

July 1-3, 2008
Prague, Czech Republic

Organized by

Institute of Photonics and Electronics AS CR, v.v.i.
(Academy of Sciences of the Czech Republic)

**Ist Medical Faculty, Charles University, Prague
Institute of Physiology**

Faculty of Electrical Engineering
Czech Technical University in Prague
Czech Republic

National Institute of Public Health
Ministry of Health Care of the Czech Republic

Faculty of Mathematics, Physics and Informatics
Comenius University, Bratislava
Slovak Republic

Faculty of Technical Sciences, University of Novi Sad
Novi Sad, Serbia

The Symposium is organized under the aegis of
Professor Tomáš Zima

Dean of the Ist Medical Faculty, Charles University
and

Dr. Vlastimil Matějec

Director of the Institute of Photonics and Electronics AS CR, v.v.i.
under the auspices of the National URSI Committee of the Czech Republic.

International Scientific Committee:

J. Pokorný – Chair	Czech Republic
I. Y. Belyaev,	Sweden
H. Berg,	Germany
V. N. Binhi,	Russia
L. Brizhik,	Ukraine
E. Del Giudice,	Italy
A. Foletti,	Italy
T. Hianik,	Slovak Republic
N. Jaffrezic-Renault,	France
A. Jandová,	Czech Republic
F. Jelínek,	Czech Republic
I. Jerman,	Slovenia
O. Kittnar,	Czech Republic
N. Leitgeb,	Austria
A. Liboff,	USA
M. Nedbalová,	Czech Republic
F.-A. Popp,	Germany
M. Satarić,	Yugoslavia
F. Šrobár,	Czech Republic
S. Trojan,	Czech Republic
J. A. Tuszyński,	Canada
V. Vetterl,	Czech Republic
G. Vitiello,	Italy
M. Vojtíšek,	Czech Republic
J. Vrba,	Czech Republic
J. Zon,	Poland
A. Zrimec,	Slovenia

Organizing Committee:

F. Šrobár – Chair

M. Cifra A. Jandová F. Jelínek P. Kacerovský M. Nedbalová M. Vojtíšek

TOPICS

Coherence and Electromagnetism in Biological Systems

The Fröhlich hypothesis

- Nonlinear interactions between elastic and polarization fields
- Nonlinear mechanism of coherence and coherent vibrations

Electrical polar structures – cytoskeleton: microtubules and actin filaments

Energy supply to and excitation of cellular and subcellular structures

Generation of electromagnetic fields at the cellular and subcellular levels

Measurement of electromagnetic emission

Endogenous electromagnetic fields and cellular signaling systems

Electromagnetic transport of reaction components in cells

Interaction of Biological Systems with External Electromagnetic Fields

Biophysical mechanisms of interaction

Effects of external fields on electrically polar macromolecules and
polar structures in cells

Effects of external fields on brain processes

Medical Aspects of Electromagnetic Fields

Dysfunction of mitochondria in cancer cells

Disintegration of the cytoskeleton in cancer cells

Electromagnetic treatment of cancer

Effects on brain processes and on nerve stimulation

Problems of application of external electromagnetic fields

Official language of the Symposium is English. The program of the Symposium will contain invited lectures (30 mins) and contributions (oral - 15 mins).

Abstracts will be reviewed by the international Scientific Committee. The authors will be notified of the International Scientific Committee's decision.

Important Information

Deadline for sending title and short abstract of your contribution

April 15, 2008

We will inform you about possibility of publication of the selected papers and about the deadline for sending manuscripts.

Symposium Office:

Institute of Photonics and Electronics

Symposium BACEM2008

Chaberská 57

182 51 Prague 8 – Kobylisy

Czech Republic

Tel: +420 2 66773432 Fax: +420 2 84680222 E-mail: pokorny@ufe.cz

<http://www.ure.cas.cz/events/bacem2008.php>

GENERAL INFORMATION

Travel arrangements

Airlines

The airport Ruzyně has daily flights within and beyond Europe. For the transport from the airport to the center of Prague the participants may take airport taxi, shuttle van, or bus. The airport taxis (services like Čedas, AAA, Fix Taxi) provide individually routed transport. The fare to the city centre is about 650 – 720 CZK (Crowns, Kč), i.e. about 25 – 28 EUR (taking the early February 2008 exchange rate of 25.7 CZK/Euro). There is also a minibus Smart Shuttle service: the minibus may be shared with up to four persons and the price for the whole load of passengers is 480,-Kč, i.e. about 18.7-EUR (transport to the center of Prague); for 5 – 8 persons the price for the whole load is 844 Kč (33 Eur). Bus shuttle „Airport Transport“ costs 90 Kč (3.5 EUR) to the Metro (line A) station Dejvická and 120 Kč (4.7 EUR) to the “V celnici” street near the Airport Center at the Namesti republiky (departures at intervals of 30 mins). A special fast bus denoted AE can be used to Metro (line A) station Dejvická (30 Kč, 1.17 EUR) or to the Metro (line C) Holešovice Station - Holešovické nádraží (45 Kč, 1.75 EUR). The cheapest way to get from the airport is to take the public bus line No 119 which will move you to the A Metro line, station Dejvická (in about 22 min) for just 26,-Kč, i.e. 1 EUR (plus possibly a 13 Kč ticket for your luggage) or line No 100 to the B Metro line, station Zličín. The tickets have to be bought in advance at the airport at the information stall or at a vending machine.

Train

The Prague stations are the crossroads for passenger trains. The Main Station (Hlavní nádraží), the Holešovice Station (Holešovické nádraží), and the Masaryk Station (Masarykovo nádraží) are linked by the underground (Metro, line C and line B).

Local Public Transportation

The underground (Metro), trams, and buses form a united transportation system in Prague. The transfer ticket costs 26,-Kč. The ticket is valid for the Metro, trams, and buses in the 0 tariff zone which includes the Ruzyně airport and may be used 75 minutes after stamping. Non transfer ticket for one way by either tram or bus or Metro costs 18,-Kč and is valid 20 min or for a trip not longer than 5 Metro stops (not counting the starting station). Tickets must be bought in advance at the tabacconist shops, in the offices located in the Metro, or in the traffic central control office which is in the middle of a short street “Na bojisti” near the Metro station “I.P Pavlov square”. The passenger is obliged to stamp the ticket immediately after entering the vehicle or the Metro area for the first time. We must point out that validity of the ticket is time limited. Seasons tickets (valid in the Prague municipal network): The 24 hours ticket costs 100 Kč, the 3 days ticket 330 Kč, and the 5 days ticket 500 Kč (an additional ticket for a luggage costs 13 Kč).

Information

We would like to inform all participants that prices of the Prague taxi services may have unpredictable significant upward deviations with non-negligible probability of occurrence.

Accommodation

LUNIK *** S € 85 D € 116

Londynska street 50
Fax: +420 224 253 986
<http://www.hotel-lunik.cz>
info@hotel-lunik.cz

Booking directly in the hotel. With respect to high summer season in the time of Symposium early reservation is recommended.

The participants may arrange accommodation in other Prague hotels by themselves or using a travel agency. List of hotels near the Symposium venue is included.

Accommodation is also provided in the hotel rooms of the student residence „Kajetánka“.

Address: Radimova 12/35
160 00 Prague 6

Single room (one person per day)	520,-Kč (€ 20,-)
Double room (one person per day)	440,-Kč (€ 17,-)

Breakfast is included in the price.

Reservation in „Kajetánka“ can be arranged by the Symposium office after payment for one day stay to the Symposium account before May 31, 2008.

Participants can get to the „Kajetánka“ by taking bus No 108 or 174 from the Metro A station „Hradčanská“.

Weather

Weather in the first half of July is usually warm (25–30°C) but rain may occur - rain lasting several days with considerable lower temperature (even below 20°C).

List of Hotels near the Symposium venue

GREEN GARDEN S € 100 D € 118

Fugner square 4
Fax: +420 224 262 214
<http://www.greengarden.cz>
hotelgreengarden@ti.cz
reservace@hotelgreengarden.cz

SOFIA S € 62 D € 73

Americka street 28
Fax: +420 222 515 416
<http://www.avehotels.cz/hotels/sofia.html>
sofia@avetravel.cz
sofia@avehotels.cz

TYL Tylovo square 5 Fax: +420 221 595 712 http://www.hoteltyl.com info@hoteltyl.com	S € 105	D € 110
AMETYST Jan Masaryk street 11 Fax: +420 222 921 999 http://www.hotelametyst.cz info@hotelametyst.cz	S € 165	D € 225
RESIDENCE SELECT Sokolska street 34 Fax: +420 296 300 212 http://www.selecthotel.cz booking@selecthotel.cz	S € 110	D € 125
TIVOLI Sokolska street 48 Fax: +420 296 114 402 http://www.tivolihotel.cz booking@tivolihotel.cz	S € 110	D € 125
IBIS Katerinska street 36 Fax: +420 266 000 249 http://www.hotelibis.cz resa-praha-re04@accor.com	S € 105	D € 105
NOVOTEL Katerinska street 38 Fax: +420 266 000 250 http://www.novotel.com H3194@accor.com	S € 130	D € 130
HOTEL 16 Katerinska street 16 Fax: +420 224 920 626 http://www.hotel16.cz hotel16@hotel16.cz	S € 106	D € 132
HOTEL KETTNER Lublanska street 23 Fax: +420 224 261 529 http://www.clubhotelkettner.cz hotel@clubhotelkettner.cz	S € 78	D € 85

SYMPOSIUM INFORMATION

Symposium Location

The building of the Institute of Physiology of the 1st Faculty of Medicine, Charles University, Albertov street 5, Prague 2. It is about 15 mins walking distance from the tram and the C line Metro station I.P. Pavlov.

Official Language

The official language of the Symposium is English.

Official Invitations

The Symposium committee will send official invitation on request.

Registration Office

The Institute of Physiology of the 1st Medical Faculty Albertov street 5, Prague 2)

Monday June 30, 2008

Tuesday July 1, 2008

Wednesday July 2, 2008

Thursday July 3, 2008

Registration Fee

Registration fee for participation in the Symposium:

Advanced registration (before June 15, 2008)	90,-EUR (2400,-Kč)
One day advanced registration	40,-EUR (1100,-Kč)
On site registration	95,-EUR (2500,-Kč)
One day on site registration	45,-EUR (1200,-Kč)
Young scientists registration (up to age 35 years)	60,-EUR (1600,-Kč)
Young scientists one day registration	30,-EUR (800,-Kč)
Dinner – Tuesday July 1, 2005 (Dinner will be payed on site)	40,-EUR (1100,-Kč)

The fee for the „Bank transfer“ has to be paid by the orderer. The registration fees are given in nett amounts. On site payment have to be done in cash.

Participants will be registered after payment of the registration fee.

Refunds will be given after cancellation received no later than June 15, 2008. No refunds will be given after June 15, 2008.

Payment

The registration fee may be paid in advance by the „Bank transfer“.

The following data are necessary for payment from abroad:

1) IBAN: CZ16 0300 0000 0001 31417340

2) SWIFT CODE: CEKO CZPP

3) Beneficiary's Bank Address:

CSOB a.s.

Ke Stirce 50, Praha 8

Czech Republic

4) Beneficiary:

Institute of Photonics and Electronics AVCR

Address: Chaberska 57, Prague 8-Kobylisy, 182 51

5) Purpose of payment:

BACEM +Your name

The following data are necessary for payment in the Czech Republic:

Number of account:

131417340/0300 VS 5563 KS 0308

Zpráva pro příjemce:

Your name

On site payment in cash may be done at the registration office.

Attendance Certificate

A „Certificate of Attendance“ will be issued only if requested. These will be available at the Symposium registration office.

Projection Equipment

Data projector with computer (Windows) will be available for projection. Overhead projection will be available, too.

Platform Sessions

Platform Sessions will contain invited papers and contributions. The time allocated to individual papers (including discussion) is indicated in the program (30 mins invited papers, 15 mins contributions – including discussion).

Publications

Papers presented at the Symposium may be published in a special issue of the journal “Electromagnetic Biology and Medicine”(EMBM) and of the journal “Folia Biologica” (FB).

Instruction for authors - EMBM: <http://www.tandf.co.uk/Journals/authors/lebmauth.asp>

(selected papers)

- FB: <http://www.folia-biologica.org/instructions>.

The participants will be informed about the deadline for sending the manuscripts at the Symposium.

SCHEDULE AT A GLANCE

Tuesday, July 1, 2008

Institute of Physiology, 1st Medical Faculty, Albertov 5
9.00 – 12.40, 13.30 – 15.00 Program of the Symposium

Carolinum, Ovocný trh 3

17.00 – 19.00 Opening Session

G.J. Hyland

Fröhlich's Coherent Excitations and the Cancer Problem

Concert

19.30 – 22.30 Dinner

Wednesday, July 2, 2008

Institute of Physiology, 1st Medical Faculty, Albertov 5
9.00 – 12.45, 13.30 – 19.15 Program of the Symposium

Thursday, July 3, 2008

Institute of Physiology, 1st Medical Faculty, Albertov 5
9.00 – 13.45 Program of the Symposium

13.45 Closing

Program of the Symposium

Tuesday , July 1, 2008

Lecture Hall –Institute of Physiology, Albertov 5

9.00 – 9.10 Introductory Remarks

Chair: *A.R. Liboff, L.S. Brizhik*

9.10 – 9.40 *E. Del Giudice*
The Autocatalysis in Living Matter

9.40 – 10.10 *A.R. Liboff*
The Role of Electric Polarization in the Viability of Living Systems

10.10 – 10.40 *L.S. Brizhik*
Effects of External Periodic Fields on Charge Transport in Macromolecules

10.40 – 10.55 Break

Chair: *H. Berg, A. Szasz*

10.55 – 11.25 *S. Zeković, Z. Ivić*
Inapplicability of Small-Polaron Method for the Explanation of Infrared Absorption Spectrum in Acetanilide

11.25 – 11.55 *M. Škarja, R. Ružič, I. Jerman*
Susceptible Electrically Based Sensors for Measurement of Active Electrical Nature of Humans

11.55 – 12.10 *A. Szasz*
Could the Field-Free Electromagnetic Potentials Have any Role in Biology?

12.10 – 12.40 *H. Berg, B. Günther, I. Hilger, M. Radeva, N. Traitcheva, L. Wollweber, S. Yamaguchi*
Bioelectromagnetic Field Effects on Cancer Cells and Tumors

12.40 – 13.30 Lunch Break

Chair: *J.E. Jirásek, E.A. Preoteasa*

13.30 – 14.00 *J. Kobilková, J.E. Jirásek*
Cellular Hydration and Invasiveness in Cervical Intrauterine Neoplasias

14.00 – 14.15 *L. Strašák, J. Krejčí, E. Bártová, L. Fojt, V. Vetterl*
Effect of ELF-EMF on Brain Protein in Mice

14.15 – 14.45 *A. Čoček, M. Ambruš, A. Dohnalová, A. Hahn, A. Jandová*
Changes of Leukocyte Adherence Ability Under the Influence of Magnetic
Field of Power Frequency in The Course of a Treatment of Patients with Head
and Neck Carcinoma

14.45 – 15.00 *E.A. Preoteasa, M.V. Apostol*
Collective Dynamics of Water and Biological Roles in The Living Cell. A
New Model and Some New Hypotheses

17.00 – 19.00 **Opening Session**
Carolinum – Ovocný trh 3

Welcome Addresses

G.J. Hyland

Fröhlich's Coherent Excitations and the Cancer Problem

Concert

Sightseeing of Carolinum

19.30 – 22.30 **Symposium Dinner**

Wednesday, July 2, 2005

Lecture Hall – Institute of Physiology, Albertov 5

Chair: *F.-A. Popp, E. Marková*

9.00 – 9.30 *J. Tuszyński, T. Huzil*
MD and QMMM Modeling Successfully Predict Binding and Effectiveness of
Novel Colchicine Derivatives Against Multiple Cancer Cell Lines

9.30 – 10.00 *F.-A. Popp*
Cancer Growth and Its Inhibition in Terms of Coherence

10.00 – 10.30 *V.I. Fedorov*
Reactions of Living Systems on Electromagnetic Radiation of Low-Frequency
Part of Terahertz Range

10.30 – 11.00 *E. Marková, R. Sarimov, F. Johansson, D. Jenssen, I. Belyaev*
Exposure to ELF Magnetic Field Turned to Zn Inhibits Growth of Cancer Cells

11.00 – 11.15 **Break**

Chair: *M. Satarić, I. Jerman*

11.15 – 11.30 *O. Szasz*
Thermally Induced but not Temperature-Dependent Effects in Oncological
Electro-Hyperthermia Treatment

11.30 – 11.45 *G.J. Hyland*
Fröhlich's Coherent Excitations and the Cancer Problem

11.45– 12.15 *I. Jerman, L. Jejčič, M. Škarja*
Absorption and Transmission of the Near Field May Disclose the
Physiological States of Animals (Mealworm Beetle)

12.15 – 12.45 *M. Satarić*
Tuning Microtubule Motor Proteins by Intrinsic Electric Fields

12.45 – 13.30 Lunch Break

Chair: *A. Foletti, G. Andocs*

13.30– 13.45 *I. Engler, Ch. Atzmüller, N. Bresgen, V. Donic, W. Hainschwang, K. Jutka,
B. Krammer-Reubel*
Bio-Electromagnetic Qualities of Five Oxygen Species in Ionised Oxygen
Therapy (O_2 , $O_2-\bullet$, $O_2+\bullet$, 1O_2 , O_3) - Experimental and Clinical Approach to
Cancer

13.45 – 14.00 *G. Andocs*
Electro-Hyperthermia Treatment of Cancer: from the Laboratory to Clinic

14.00 – 14.15 *E. Cocherová, Jozef Surda, Oldrich Ondráček*
Absorption of Microwave Radiation in the Human Head

14.15 – 14.45 *A. Foletti, S. Grimaldi*
Informative Effect by Means of ELF Signals on Cells As Possible Tool of an
Informative Medicine

14.45 – 15.15 *F. Jelinek, M. Cifra, J. Pokorný, J. Hašek, J. Vaniš, J. Šimša, I. Frýdlová*
Measurement of Electrical Oscillations and Mechanical Vibrations of Yeast
Cells Membrane around 1 kHz

15.15 – 15.45 *A. Jandová, J. Kobilková, S. Trojan, M. Nedbalová, A. Dohnalová, A. Beková,
V. Slavík, M. Janoušek, A. Čoček, J. Pokorný, J. Sanitrák*
Cell-Mediated Immunity in Cervical Cancer Evolution

15.45 – 16.00 *Y.Yu. Shchegoleva, E.M. Gromozova, N.V. Bryuzginova, S.I. Voychuk*
Effects of Electromagnetic Radiation on Cell Control Systems

16.00 – 16.15 Break

- Chair:** *L. Strašák, V.I. Lobyshev*
- 16.15– 16.30 *V.I. Lobyshev, A.Ya. Muhachev, A.M. Lomonosov, D.I. Nikitin*
The Effects of Extra Low Frequency and Low Intensity Magnetic Fields on Water and Properties of Bacterial Cells
- 16.30 – 16.45 *L. Strašák, J. Krejčí, E. Bártová, L. Fojt, V. Vetterl*
Low-Frequency Magnetic Field Effect on Cytoskeleton and Chromatin in A549 Cells
- 16.45 – 17.00 *Yu.P. Chukova*
Bose Condensation and Nonthermal Processes in Living Systems under Millimeter (mm) Radiation
- 17.00 – 17.15 *M. Teplan, A. Krakovská, S. Štolc*
Phase Synchronization in Human EEG During Audio-Visual Stimulation
- 17.15 – 17.45 *M. Nedbalová, A. Jandová, S. Trojan, A. Dohnalová*
The Comparison of Methods for Determination of Humoral and Cell Mediated Immunity in Patients with Breast Cancer
- 17.45 – 18.15 *M. Vojtišek, J. Knotková, L. Kašparová, J. Patková, E. Švandová*
EMF Metal and Brain Energy Metabolism
- 18.15 – 18.30 *T.Yu. Shchegoleva, E.A. Arhipova*
Mechanisms of Doxorubicin Action on Cell Regulation Systems by Means of the EHF Dielectrometry
- 18.30 – 18.45 *Z. Pšenáková*
Measurement of Electromagnetic Field of GSM Mobile Phone by Interaction with Biological Tissue.
- 18.45 – 19.15 *M. Škarja*
Some Physical Aspects of Electrotherapies of Cancer and Other Diseases
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Thursday, July 3, 2005

Lecture Hall – Institute of Physiology, Albertov 5

- Chair:** *I. Belyaev, V.N. Binhi*
- 9.00 – 9.30 *I. Belyaev*
New Paradigm for Assesment of Biological Efficiency of Electromagnetic Fields
- 9.30 – 10.00 *V.N. Binhi*
Magnetic Nanoparticles in Organisms: Possible Association with Oncology

- 10.00 – 10.30 *J. Pokorný*
Biophysical Cancer Transformation Pathway: Mitochondria Dysfunction,
Cytoskeleton Disintegration, and Electromagnetic Field Disturbances in the
Cell
- 10.30 – 10.45 *T. Sandulescu, G. Sajin, V. Moraru*
Interaction Between Non-Thermal Power Levels Microwaves and Malignant
Cells
- 10.45 – 11.00 *M. Sarimov, V.N. Binhi*
Influence of the Compensation of the Geomagnetic Field on Human Cognitive
Processes
- 11.00 – 11.15 Break**
- Chair:** *R.T. Leskovar, M. Vojtišek*
- 11.15 – 11.45 *J. Vrba et al.*
Hyperthermic Cancer Treatment
- 11.45 – 12.15 *F. Šrobár*
Occupation-Dependent Access to Metabolic Energy in the Fröhlich System
- 12.15 – 12.30 *R.T. Leskovar, I. Jerman, R. Krašovec*
Royal Raymond Rife and Electrotherapy of Cancer – History, Conspiracy and
Opportunity
- 12.30 – 12.45 *J. Mrázová*
Measurement of Bioelectric-Magnetic Potentials by Eye Movement
- 12.45 – 13.45 Discussion
- 13.45 **Closing**