

Dear Participant,

Our original plan to organize a small informal workshop on fluorescence imaging techniques had to be largely modified as the number of registrations substantially surpassed our wildest imagination. At present, we expect nearly 40 researchers, ca. 30 students and several exhibitors from all around the world. We shall do our best to adapt to the larger number of participants without compromising the scientific productivity of the meeting. Logistically most challenging in the new situation is providing accommodation. Here in Nové Hrady, we not only work on an interface of several scientific fields but also in the middle of the former cold war border-zone between East and West of Europe where not many hotels and restaurants have been constructed in the past and where high quality accommodation is still sparse. However, this is certainly compensated by the beautiful and well-preserved nature, including the oldest European nature preserve Sofie's Forest, and by the many attractive historical sites in this region.

The meeting will start with an ice-breaker party in the Blue and Mirror Halls of the chateau. The workshop will be organized in morning and evening blocks of lectures with afternoons left open for poster viewing, experiments, informal discussions, and the free-time program. The afternoons can be used also to gain hands-on experience or, at least, see new products of sponsors and exhibitors: the newest version of the FluorCam instrument by Photon Systems Instruments, spol. s.r.o. / CZ, the new imaging fluorometers by Walz, GmbH / D and by Qubit, Canada, screening digital confocal microscope by Till-Photonics, GmbH / D, color confocal system by Zeiss Jena, AG and other. A draft of the scientific program of the workshop, arrival information and info on the free-time options are enclosed to this letter. Please, verify that your lecture / poster is correctly referenced in the program and let us know of any changes so that the final program can be made.

If you have any questions, comments or suggestions, please, contact Robert Dulfer at <u>dulfer@greentech.cz</u>.

We are looking forward to see you in July in Nové Hrady.

The Organizers.

TRAVEL & FREE-TIME PROGRAM

The workshop location is described at <u>http://www.greentech.cz/transport/index_cz.html</u>. The registered participants who requested travel assistance from Prague and who received confirmation of this service will be picked up at the Prague-Ruzyne airport or from the Wilson railway station on Sunday early afternoon. Newly, we offer travel assistance from the railway station in Linz, Austria that will be provided for the EC29 train arriving on Sunday at 17.50 from Dortmund (dept.8,40) via Köln (dept.10,00) and Frankfurt am Main, airport (dept.12,02). Those interested in this service are kindly asked to contact Robert Dulfer for conditions and confirmation (<u>dulfer@greentech.cz</u>). We also provide transport from České Budějovice to Nové Hrady. Requests for travel assistance from České Budějovice should be sent to us at least one week in advance. On-site phone support for arrival will be available on Sunday and Monday, with a mobile operator ++420-606-628865 or on Telekom line ++420-335-361259.

The registration will be open in the entrance hall of the Buquoy chateau (Nový zámek) in Nové Hrady on Sunday from 2 P.M. to 8 P.M and on Monday 8.00 A.M to 12.00 AM.

Monday afternoon has been reserved for a guided tour to Český Krumlov, a UNESCO World Heritage Site.

On Tuesday and Wednesday, we have for the afternoons a varied program of free-time activities. Each participant, who paid the workshop fee, can reserve during the registration one of the "intensive" free-time programs. Also possible it is to reserve for biking and sight-seeing tours in the region, a soccer game, and other alternatives.

The intensive programs for either Tuesday or Wednesday afternoon are:

- 1. Rafting around Český Krumlov
- 2. Visit to the Třeboň Spa with mud bath and massage
- 3. Guided tour in the famous Budvar brewery including a beer tasting.

Thursday afternoon will be used for poster sessions and final discussion, and the workshop will be closed with a concert in the Monastery.

PRELIMINARY WORKSHOP PROGRAM

MONDAY 22.7.2002: STATE OF THE ART OF CHLOROPHYLL FLUORIMETRY

7.00 – 8.00 Breakfast

- **8.20 8.30** <u>Ladislav Nedbal, Inst. Landscape Ecology Acad.Sci. and Inst.Phys.Biol.</u> <u>Univ.S.Bohemia, CZ:</u> Welcome address
- Morning session on non-imaging chlorophyll fluorimetry (Chair Barry Osmond)
- **8.30 9.00** <u>Govindjee, Univ. Illinois, USA:</u> Chlorophyll a fluorescence and Photosynthesis: Basics.
- **9.00 9.30**: <u>Uli Schreiber, Univ.Wuerzburg, D:</u> Pulse-Amplitude-Modulation (PAM) fluorometry and saturation pulse method.
- **9.30 10.00**: <u>Wim Vredenberg, Univ.Wageningen, NL</u>: Photoelectrochemical control of chlorophyll fluorescence *in vivo*.
- 10.00 10.30: Ivan Šetlík/Ondřej Prášil, Univ.S.Bohemia, CZ: Do we know everything?
 - 10.30 11.00: Coffee, tea, water, cakes, fruits (Entrance Hall).
- **11.00 12.00** Moderated discussion (*Govindjee, Schreiber, Vredenberg, Šetlík, Prášil / chair: Osmond*)

12.00 – 12.30: Sandwich lunch, fruits, soft drinks, beer (Entrance Hall)

12.30 – **13.30** Posters and guided tour demonstrating instrumentation displayed for testing and presentations.

13.30 – 17.30: Bus tour to Český Krumlov (Entrance Hall) 17.30 – 18.30: Warm dinner (Refectory of the Serviten Monastery)

• Evening session on kinetic imaging of chlorophyll fluorescence (Chair T.Vogelman).

- 18.45 19.15 Barry Osmond, Columbia Univ., USA: Historical aspects.
- 19.15 19.45 Paul F. Daley, Lawrence Livermore Laboratory, USA: Title pending.
- **19.45 20.15** <u>Govindjee, Univ. Illinois, USA:</u> Fluorescence Life-Time Imaging of *Chlamydomonas reinhardtii*.
- 20.15 20.45 <u>Klaus Kemnitz, EuroPhoton, GmbH., D:</u> Title pending.
- **20.45** ... Moderated discussion (*Osmond, Daley, Govindjee, Kemnitz / chair: Vogelman*)

TUESDAY 23.7.2002: APPLICATIONS OF THE TECHNIQUE

7.00 – 8.00 Breakfast

- Morning session on applications of chlorophyll fluorescence imaging (Chair Govindjee)
- **8.30 9.00** <u>Tom Vogelmann, Univ.Vermont, USA:</u> Imaging absorption profiles within leaves from chlorophyll fluorescence.
- **9.00 9.30**: <u>Naila Ferimazova, Acad.Sci./ Univ.S.Bohemia, CZ:</u> Fluorescence Kinetic Microscopy of Photosynthetic Cell. Stress Reactions.
- **9.30 10.00**: <u>Ladislav Nedbal, Acad.Sci./Univ.S.Bohemia, CZ:</u> Imaging complex metabolic oscillations forced by harmonic irradiance of plants.
- 10.00 10.30: Jörg Meurer, LM Univ.Muenchen, D: Title pending..

10.30 – 11.00: Coffee, tea, water, cakes, fruits (Entrance Hall).

- 11.00 12.00 Moderated discussion (Vogelmann, Ferimazova, Nedbal, Meurer / chair: Schurr)
 - 12.00 12.30: Sandwich lunch, fruits, soft drinks, beer (Entrance Hall)
 - 12.30 17.30: Free time, posters, discussions, experiments

17.30 – 18.30: Warm dinner (Refectory of the Serviten Monastery)

- Evening session on applications of chlorophyll fluorescence imaging (Chair Schreiber)
- **18.45 19.15** <u>Matilde A. Baron, Consejo Superior de Investigaciones Cientificas, E:</u> Chlorophyll Fluorescence Imaging of Tobamovirus-Infected Plants.
- **19.15 19.45** <u>Roland Valcke, Limburgs Universitair Centrum, B:</u> Fluorescence Imaging and Physiological Disorders.
- 19.45 20.15 Carl-Otto Ottosen, Danish Institute of Agricultural Sciences, DK: Title pending.
- 20.15 20.45 <u>Miloš Barták, Masaryk Univ, CZ:</u> Sources of heterogeneity in the yield of PSII in lichen thalli.
- **20.45** ... Moderated discussion (*Baron, Valcke, Ottosen, Bart<u>á</u>k/ chair: Schreiber*)

WEDNESDAY 24.7.2002: INSPIRATION FROM OTHER BIO-IMAGING TECHNIQUES AND APPLICATIONS

7.00 – 8.00 Breakfast

• 8.30-12.00 Morning session on high-end techniques

10.30 – 11.00: Coffee, tea, water, cakes, fruits (Entrance Hall). 12.00 – 12.30: Sandwich lunch, fruits, soft drinks, beer (Entrance Hall) 12.30 – 17.30: Free time, posters, discussions, experiments 17.30 – 18.30: Warm dinner (Refectory of the Serviten Monastery)

• 18.45-... Evening session on high-end techniques

The exact timing of the lectures of the Wednesday program will be specified later this month by Rainer Uhl. The major motivation of the Wednesday program is:

- 1) To show advanced imaging applications from other fields that can inspire innovation in chlorophyll fluorescence imaging of plants.
- 2) To inform about novel components having potential to be applied in Chl fluorescence imaging.

The program will include (lecture topics):

David Kaftan, Weizmann Inst., Rehovot, Israel: Atomic Force Microscopy of Thylakoid Membranes.

Rainer Uhl, LM Universitaet, Muenchen, D: Two-photon fluorescence microscopy

Rainer Uhl, LM Universitaet, Muenchen, D: Color confocal microscopy

Representative of PCO, GmbH, D: CCD cameras

Lab of Petra Schwille, D: Fluorescence Correlation Spectroscopy.

Klaus Nettesheim, Univ.Freiburg, D: Object tracking.

Sebastian Munck, LM Universitaet, Muenchen, D: Ca imaging

Sebastian Munck, Muenchen, D: Dielectrophoretic cell sorting

Jan Valenta, Charles University, Praha, CZ: Photo- and Electroluminescence of Single Nanocrystals.

Lab of Tom Jovin, Göttingen, D: Interferometric approach to spectral imaging

THURSDAY 25.7.2002: IDENTIFYING BOTTLENECKS AND PROPOSING SOLUTIONS.

7.00 – 8.00 Breakfast

• Morning session on novel applications (Chair Nedbal)

- **8.30 9.00** Esa Tyystjärvi, Univ.Turku, Fin: Use of fluorescence induction curves as barcodes for automatic plant identification
- 9.00 9.30: <u>Anya Salih, Univ.Sydney, Australia:</u> Title pending.
- **9.30 10.00**: <u>Harald Bolhar-Nordenkampf, Univ.Wien, A:</u> Chlorophyll fluorescence as a tool in ecophysiology.
- 10.00 10.30: Moderated discussion (Tyyistjaervi, Salih, Bolhar-Nordenkampf / chair: Nedbal)

10.30 – 11.00: Coffee, tea, water, cakes, fruits (Entrance Hall).

- **11.00 11.20**: <u>Uli Schurr, Univ.Heidelberg, D:</u> Imaging of Dynamics of Growth and Transpiration
- **11.20 11.40** <u>Uwe Rascher, Columbia Univ., USA:</u> Spatio-temporal patterns of CAM photosynthesis.
- **11.40 12.00** <u>Achim Walter, Columbia Univ., USA:</u> Spatio-temporal patterns of dicot leaf growth.
- 12.00 12.30: Moderated discussion (Schurr, Rascher, Walter / chair: Uhl)

12.30 – 13.30: Sandwich lunch, fruits, soft drinks, beer (Entrance Hall)

13.30 – 15.30: Posters

1. Gavel, Alan, Acad.Sci., CZ: Fluorescence Imaging of Microcystis Colonies

- 2. Hauska, Guenter, Univ.Regensburg, D: In Vivo Measurement of Photosynthetic Activity in Colonies of *Volvox carteri* Application of Pulsed Fluorescence Microscopy
- 3. Hermans, Christian R.M., Univ.Libre de Bruxelles, B: Herbicide Metabolisation in Plants
- 4. Christ, Maja, Univ.Heidelberg, D: Imaging Dynamics of Plant Growth
- 5. Remešová, Ivana, Mendel Univ., CZ: Effects of Metrybuzin on Parameters of Very Rapid Fluorescence Transients.
- 6. Rodriguez, Ronald M., Univ.Geneva, CH: Fluorescence Imaging Software
- 7. Roháček, Karel, Acad.Sci./Univ.S.Bohemia, CZ: Chlorophyll Fluorescence Parameters in Photosynthesis
- 8. Rosenquist, Eva, Danish Institute of Agricultural Sciences, DK: Title pending
- 9. Šantrůček, Jiří, ACAD.SCI./USB, CZ: Co-Oscillations in Leaf Photosynthesis...
- <u>10. Van de Ven, Martin, Limburgs Universitair Centrum, B:</u> Homodyning Fluorescence Lifetime Imaging on Fruit
- <u>11. Zude, Manuela, Potsdam, D:</u> Chlorophyll Fluorescence Imaging and LIFS Applications in Horticulture

15.30 – **16.30**: Discussion on workshop results: Challenges and opportunities

- Perspectives of the technique in systems biology, high-throughput screening, precision farming and other.
- Networking in Framework 6
- Workshop proceedings
 - 15.30 18.30: Barbecue, beer, wine
 - 18.30 Concert