



Lasers in Medicine and Life Sciences

Advanced summer school for under-graduate and postgraduate students of medicine and physics

14th–25th July 2014



National Development Agency
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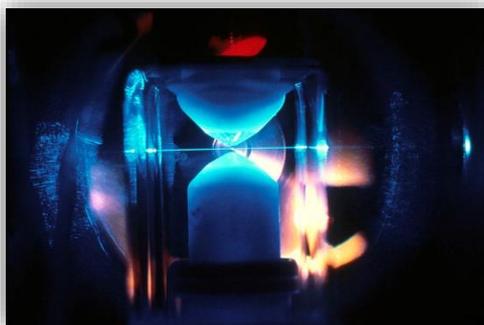


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1. Invitation

The city of Szeged is proud to have been chosen as the site of one of the four pillars of a massive European laser project entitled **ELI** (Extreme Light Infrastructure). Szeged will host **ELI-ALPS** (Atto-second Light Pulse Source), a facility dedicated to ultra-short laser pulses. Apart from breaking new ground in the study of very fast atomic and molecular processes, it is also expected to bring about improvements in medicine and life sciences. To discuss and disseminate the implications of these developments, we hereby invite you to the summer school entitled **Lasers in Medicine and Life Sciences 2014**, taking place between 14 and 25 July, 2014.



2. Programme

Distinguished European researchers have accepted our invitation to deliver keynote talks on the following topics:

- the status of the ELI project
- confocal microscopy
- micromanipulation
- muscle physiology investigations
- the treatment of retinal diseases
- cataract and refractive surgery
- laser surgery
- lasers in dermatology
- lasers in microcirculation
- hadron therapy

Speakers

- Ashraf Badawi (Cairo University, EG)
- Ferenc Bari (University of Szeged, HU)
- Jens Biegert (Institute of Photonic Sciences, DE)
- Charalambidis Dimitrios (Scientific Director of ELI-ALPS)
- Tomas Cizmar (University of Dundee, UK)
- Gábor Csúcs (Scientific Centre for Optical and Electron Microscopy, CH)
- Miklós Erdélyi (University of Szeged, HU)
- Andrea Facskó (University of Szeged, HU)
- Győző Garab (Biological Research Centre, Szeged, HU)
- Imre Gerlinger (University of Pécs, HU)

- Katalin Hideghéty (University of Szeged, HU)
- Béla Hopp (University of Szeged, HU)
- Péter Horváth (Biological Research Centre, Szeged, HU)
- Clemens Kaminski (University of Cambridge, UK)
- Miklós Kellermayer (Semmelweis University, HU)
- Lajos Kemény (University of Szeged, HU)
- Martin Leahy (National University of Ireland, IE)
- Péter Maróti (University of Szeged, HU)
- Ion Mihailescu (National Institute for Lasers, Plasma and Radiation Physics, RO)
- Morten Moe (Oslo University Hospital, NO)
- Justin Molloy (MRC National Institute for Medical Research, UK)
- Zoltán Zsolt Nagy (Semmelweis University, HU)
- Antal Nógrádi (Biological Research Centre, Szeged, HU)
- Pál Ormos (Biological Research Centre, Szeged, HU)
- Wolfgang Sauerwein (University Hospital Essen, DE)
- Jacek Szaflik (Medical University of Warsaw, Poland)
- Károly Osvay (Research Technology Director, ELI-ALPS)
- László Rovó (University of Szeged, HU)
- Gábor Steinbach (ASCR, Institute of Microbiology, Czech Republic)
- Gábor Szabó (University of Szeged, HU)
- Katalin Varjú (University of Szeged, HU)
- György Vámosi (University of Debrecen, HU)

Seminars and laboratory visits

We also offer seminars in the fundamentals of optics and laser physics, and you will have the chance to gain hands-on experience with lasers in research laboratories and clinical facilities.

Social programme

You can choose from an assortment of extracurricular activities to dive into the Szeged atmosphere, make bonds and forge a new generation of experts who will be able to live up to the potential offered by lasers in medicine. Extracurricular activities include the following:

- excursion to Budapest
- excursion to the Aquapolis, Szeged
- bike tour around Szeged
- Open Air Plays: *Gone with the wind*
- excursion to the National Memorial Park in Ópusztaszer



3. The city of Szeged



Szeged is the third largest city of Hungary and the regional centre of the Southern Great Plains. It is divided in two by the river Tisza. The name Szeged was first mentioned in a royal charter of 1183. It might have come from Hungarian 'szeg' (angle), referring to the corner the river Tisza makes with its tributary, the Maros, whilst some say it can be traced back to an archaic sense of 'szeg', meaning 'dark blond', and it refers to the colour of the water where the Maros joins the Tisza. The current cityscape was formed by the reconstruction

following the great flood of 1879, which killed 165 people and destroyed about 5600 buildings. An emblematic building of the city, the Votive Church, was erected in memory of the flood, and the sections of the outer boulevard bear the names of the cities that contributed to the rebuilding of Szeged: Rome, Brussels, Berlin, Paris, London and Moscow.

A city of 170 000, Szeged is a teeming cultural and intellectual centre with a student population of 30 000, many of whom are international students of medicine, giving the city a touch of multiculturalism. Still, it remains a quiet, human-sized, liveable and loveable city, whose atmosphere is created by the Tisza, by extensive green spaces and by enchanting statues. Boasting an average of 2000 sunshine hours a year, Szeged has earned the moniker 'the City of Sunshine'. In addition to its theatre and symphonic orchestra, in the summer Szeged also hosts the Open Air Plays, the history of which goes back more than 80 years. The Hungarian festival season concludes with the Szeged Youth Days (SZIN) in each year since 2003.



4. The University of Szeged



The University of Szeged was established in 1921 with the relocation of the University of Kolozsvár (Cluj-Napoca) founded in 1872. Since then, it has grown to be one of the most prestigious universities in Hungary, ranked as number one amongst Hungarian universities and in the top 300 in the world in three consecutive years (2003, 2004 and 2005). It is now organised into 12 faculties, which provide education for 30 000 students and employ more than 6000 people, 1000

of which are teachers. Alongside internationally noted contributions to mathematics, information technology, physical and material sciences, the University is also noted for its strong focus on life sci-

ences, augmented by close ties to the Biological Research Centre of the Hungarian Academy of Sciences. The most significant accomplishment under the auspices of the University of Szeged so far has been the discovery of vitamin C and the exploration of the citric acid cycle, made by Albert Szent-Györgyi and rewarded with a Nobel Prize in 1937.

5. Practical information and fees

Admission criteria

The programme is open to a maximum of 45 undergraduate (from 2nd year on) or postgraduate students in the fields of medicine or physics. If necessary, selection will be made considering the students' motivation, English level and previous research experience, if any.

Application

Please fill in the online application form (<http://www.lamelis.eu/content/apply.php>) and submit the required documents.

Application deadline: 15th May 2014.

Full fee: 650€. **Reduced fee: 200€** for students who submit a presentation for the student workshop. This fee includes tuition, accommodation, lunches, scheduled excursions, and extracurricular activities. We do not cover the costs of passports, visas, health insurance, travel to and from Hungary and other personal expenses.

Student workshop

The topic of the presentation can be chosen from the following areas:

- **discussion of an article written by one of our speakers**
- **'Medical lasers by 2020'**
- **'My laser experience'**
- **'Putting the ELI facilities to medical use'**

Presentations can be oral or in e-poster form. We accept pdf or pptx files for e-posters.

Further information

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Facebook:

<https://www.facebook.com/pages/Lasers-in-Medicine-Life-Science-Summer-School/584673201621547>

Youtube: <http://youtu.be/6tRNItNEjfc>