



# HEVESY GYÖRGY PhD SCHOOL OF CHEMISTRY

# **SECTIONS:**

- 1.) Introducing the School
- 2.) Hevesy György, a scientist without borders
- 3.) Outstanding former PhD students
- 4.) Recent cover-page articles
- 5.) Selected research advisors of the School
- 6.) Industrial partners

Eötvös Loránd University (ELTE) is an internationally renowned teaching and research institution attracting the most devoted and creative students from Hungary as well as from abroad. The PhD programs of the Faculty of Science of ELTE are designed for students who completed their MSc education and are interested in obtaining a PhD degree in natural sciences while performing (and learning) cutting-edge research.

FUEL HIN

Hevesy György E · L · T · E PhD School



PROFESSOR BÉLA CSÁKVÁRI (1924-2010) The first head of the PhD School

While Eötvös Loránd University traces back its foundation to 1635, when Cardinal Péter Pázmány founded a catholic university in the town of Nagyszombat (today Trnava in Slovakia) to teach theology and philosophy, the PhD School of Chemistry of Eötvös Loránd University has a considerably shorter history, as it was founded in 1993. The founding fathers of the PhD School were Professor Béla Csákvári, who headed the School between 1993 and 1998, Professor György Inzelt, and Professor István Kapovits. The School received its first accreditation on June 29, 1993 and education in the School started in October 1993 with 25 students, including one foreign student. The topics covered by the originally established PhD program included practically the whole spectrum of chemistry, i.e., inorganic chemistry, physical chemistry, analytical chemistry, environmental chemistry, theoretical chemistry, organic and biochemistry, electrochemistry, structural chemistry, and polymer chemistry. This wide variety of research topics still characterizes the School. While the PhD School of Chemistry offers a large number of advanced courses, the emphasis of the program has always been on high-quality research and publishing the achievements in the best international journals of the respective fields of chemistry. The School was reorganized in 1998 and then led by Professor György Inzelt until 2016. The number of new PhD students enrolled in the School remained between 20 and 30, the number of state-sponsored fellowships varied between 8 and 15. By the 2010s the number of PhD students enrolled in the School increased to beyond 100 (110 in 2012) and the number of foreign PhD students started to increase to beyond 10% of the total number of PhD students admitted to the School, increasing over 20% by 2017. The first PhD degrees were awarded in 1995. Since then a large number of leading Hungarian acedemic and industrial researchers received their highest level of education in the PhD School of Chemistry of Eötvös Loránd University.



Since the very beginning, the students of the PhD School of Chemistry start their PhD studies by doing research on their chosen topic under the guidance of a research advisor they selected. Besides doing research, the students must take courses they select from a long list of advanced courses and complete 8 exams. By the end of the 8-semester-long program the large majority of the PhD students obtain research results which are published (or accepted for publication) in internationally renowned journals. As of 2018, at least two such papers, whereby in one of them the PhD student must be the first author, are necessary to obtain the PhD degree. The students report about their research progress during their study at yearly conferences ("Report Days") organized by the School and they have to pass a Complex Exam at the end of Year 2.

As of 2018, the Institute of Chemistry of Eötvös Loránd University has almost 20 full professors and many further teachers and researchers working in various fields of chemistry. The Advisory Board of the Hevesy György PhD School of Chemistry consists of internationally renowned experts of their fields. The research advisors of the School have established strong collaboration with several research institutes and universities both inside and outside of Hungary, and the School regularly has visitors from abroad doing research or giving courses.

Many of the former PhD students of the School obtained postdoctoral positions throughout the world, from Australia to the United States. A considerable portion of the graduates of the Hevesy György PhD School of Chemistry end up in tenured or tenure-track positions at universities and research institutions. Some of our students pursue their research career in the non-academic environment of large international research institutions and firms.

# **PROFESSOR GYÖRGY INZELT** Head of the PHD School between 1998 and 2016



PROFESSOR ATTILA G. CSÁSZÁR Head of the PhD School since 2016

# The Advisory Board of the Hevesy György PhD School of Chemistry

Dr. Attila G. Császár, professor, head of the School (ELTE)

- Dr. György Hajós, professor emeritus (MTA TTK)
- Dr. Zoltán Homonnay, professor (ELTE)
- Dr. Ferenc Hudecz, professor (ELTE)
- Dr. György Inzelt, professor emeritus (ELTE)
- Dr. Béla Iván, senior scientific advisor (MTA TTK)
- Dr. Ernő Keszei, professor (ELTE)
- Dr. Éva Kiss, professor, program director (ELTE)
- Dr. Győző Láng, professor (ELTE)
- Dr. András Perczel, professor, program director (ELTE)
- Dr. László Péter, senior scientific advisor (MTA Wigner FK)
- Dr. József Rábai, professor (ELTE)
- Dr. Imre Salma, professor (ELTE)
- Dr. Péter Surján, professor, program director (ELTE)
- Dr. István Szalai, associate professor, the secretary of the School (ELTE)
- Dr. László Túri, professor (ELTE)

# Simple facts about the Hevesy György PhD School of Chemistry

Founded: 1993

**Discipline:** science

Form of education: PhD training

**Faculty responsible for the training:** Faculty of Science of Eötvös Loránd University **Objectives of the School:** the students must acquire, through the academic degree training, skills necessary in research, development, innovation, and higher-level education

Length of training: 8 semesters

Training type: regular school

Financing: state sponsored or tuition-fee based

**Entrance requirements:** MSc and a successful entrance exam **Language requirements:** a "type C" secondary (or equivalent) language exam in English recognized by the state (entrance requirement) and a basic level second language exam of similar status (exit requirement)

**Training phases:** First two years (phase I): 120 ECTS credits, finished with a Complex exam Last two years (phase II): 120 ECTS credits, finished with an Absolutorium

Number of ECTS credits required: 240

phase II: 120), and teaching credit (phase I: 0-12)

**Person responsible for the training program:** Dr. Attila G. Császár, professor of chemistry, head of the PhD School

Secretary of the School: Dr. István Szalai Programs of the School:

> Synthetic, organic and biomolecular chemistry, Prof. Dr. András Perczel Theoretical, physical, and structural chemistry, Prof. Dr. Péter Surján Analytical chemistry, materials science, electrochemistry, colloidal and environmental chemistry, Prof. Dr. Éva Kiss

Moduls of ECTS credits: training credit (phase I: 48-60, phase II: 0), research credit (phase I: 60,

Dr. Kiss Adám dékán úrnak

RH: 1816/92.

MŰVELÓDÉSI ÉS KÖZOKTATÁSI MINISZTER

56.918/92.XIII. DT-903/92

Sajut

Dr. Vékás Lajos rektor úrnak Eötvös Loránd Tudományegyetem Budapest

R. 16 L.

Tisztelt Rektor Úr!

A Magyar Felsőoktatási Egyesületek Szövetsége elnöke, valamint a Magyar Rektori Konferencia e nöke javaslatot készített a doktori programok akkreditációjáról, amelyet munkatársaimmal egyeztettem.

A Pályázati Felhivást, amelyet mellékelten megküldök kérem, hogy az intézményében érdekeltek számára szíveskedjék továbbítani és a pályázati anyagokat 1993. február 20-ig az Ideiglenes Országos Akkreditációs Bizottság címére benyújtani.

Budapest, 1992. november 11.

Kor. Andrásfalvy Bertalan

Melléklet

# Jegyzőkönyv

Felvétetett 1993. augusztus 26-án a Szerves Kémiai Tanszék tanácskozó termében az összevont kémiai tudományok akkreditált doktori program-vezetői részvételével. Az alábbiakban a következő észrevételeket . javaslatokat és megállapodást rögzitjük:

- A programtanács megalakulásáig a kémiai doktori programmal ideiglenes ügyvivői testületet alakítanak.
- Javasoljuk, hogy az ELTE Természettudományi Karának induló 1993/1994 tanévre.
- Fontosnak tartjuk, hogy a felvett doktoranduszok létszámát pénzek elnyerése végett.
- Sürgősen fel kell méretni programonként azt, hogy hány §-a 6.bek.).
- Tisztázni kell a belső és külső,doktori fokozatra készülők a Doktori Ískolába.
- A felvételre javasolt hallgatók ügyében sürgős hivatalos döntésre van szükség. Amennyiben felvesszük őket
- ki kell őket értesíteni a felvételről,
- kollégiumi igény felmérése és döntés a felvételekről.

Kmf.

BalinyA

Dr. Csákvári Béľa egyetemi tanár

egyetemi tanár

"How it all started in 1992"

HTTP://PHD.CHEM.ELTE.HU

kapcsolatban felmerülő ügyek intézésére alulirottak

akkreditált doktori programjai sürgősen hirdettessenek meg nyilvánosan (újsághirdetés) az 1993. október 1-jén

minél hamarabb jelentsük az ösztöndíjas és a hallgatóarányos

TMB ösztöndíjas akar átjelentkezni (Felsőokt.trv. 123

- nem ösztöndíjasok - felvételének beiskolázási módját

- a Tanulmányi Osztály intézkedjen a diákigazolvány, TBkártya, katonaság, stb. ügyében (lehetőleg szept.közepéig),

Dr. Inzelt György

Dr. Kapovits István egyetemi tanár

# "Every beginning has its own difficulties'

# MAGYAR FELSŐOKTATÁSI AKKREDITÁCIÓS BIZOTTSÁ ELNÖK

Dr. Mezey Barna		lkt.szám:	306-6 /2016
rektor Eðtvös Lor <u>Budapest</u>	And Tubbis Rayer Constants ELE 2018 E. 2,3 Reading EVE M212/MOV6 Telescine EVE M212/MOV6	MAB-kód: Dgyintéző: E-mail: Telefon: Dátum: Tárgy:	D21 Négyesi Judit negyesi@mab.hu +36 1 344-0314/127 2016. december 9. doktori iskola akkreditáció
Tisztelt Rek	pr.Krtstet		

A doktori iskolákról szóló 387/2012. (XII. 19.) kormányrendelet, valamint a Magyar Felsőoktatási Akkkreditációs Bizottság elvárásai (2016/2/VI. sz. határozat) szerint a MAB a 2016. szeptember 15-i állapot alapján értékelte az Eötvös Loránd Tudományegyetem Kémia Doktori Iskola és törzstagjainak jogszabályi és akkreditációs megfelelőségét, és az alábbiak szerint foglalt állást.

## A MAB 2016/9/X/28/2/1062 számú határozata:

Az Eőtvős Loránd Tudományegyetem 21 azonosítószámú kémiai tudományok besorolású doktori iskolájáról:

A MAB a Császár Attila vezette doktori iskolát - a működési feltételek folyamatos biztosítása esetén -2019. december 31-ig

## akkreditálja,

mert

 a törzstagok minimális létszámának; megfelel<sup>1</sup> A doktori iskola megfelelt törzstagjainak száma: 19. Császár Attila iskolavezető (kémiai tudományok) Baranyai András (kémiai tudományok) Csámpai Antal (kémiai tudományok) Hudecz Ferenc (kémiai tudományok) Inzelt György (kémiai tudományok) Iván Béla (kémiai tudományok) Kiss Éva (kémiai tudományok) Láng Győző (kémiai tudományok) Mészáros Róbert (kémiai tudományok) Mező Gábor (kémiai tudományok) Pasinszki Tibor (kémiai tudományok) Perczel András (kémiai tudományok) Péter László (kémiai tudományok) Rábai József (kémiai tudományok) Salma Imre (kémiai tudományok) Surján Péter (kémiai tudományok) Szalay Péter (kémiai tudományok) Tarczay György (kémiai tudományok) Túri László (kémiai tudományok)

Az akkreditáció szempontjából figyelembe vehető megfelelt minősítésű törzstagok száma: 18. Az egyes törzstagokról készült összegző értékelés a doktori adatbázis nem nyilvános felületén bejelentkezés után - az érintett törzstag, a DI vezető, a DI adminisztrátor, valamint a rektor számára megtekinthető.

- az egyetemi tanárok minimális létszámának: megfelel<sup>2</sup> A megfelelt minösítésű egyetemi tanár törzstagok száma: 14.
- az egyetemi tanárok többségi követelményének: megfelel<sup>3</sup>
- működési szabályzata: megfelel
- · minőségbiztosítási terve: megfelel
- képzési terve: megfelel
- honlapja: megfelel
- a tartalmas és informativ önértékelés kritériumának: megfelel

Levelezési cím: 1013 Budapest, Krisztina krt. 39/B Telefon: +36-1/344-0314, +36-1/344-0315; Fax: +36-1/344-0313 Web: www.mab.hu

A szabályzat a működést érintő összes területre kiterjed, többek között a felvétel speciális feltételeire és eljárásra, az egyéni felkészülés szabályaira, a nyelvi követelményekre, a fokozatszerzés kritériumaira és a Doktori Tanács működésére. A képzési terv kellően részletes, lefedi a doktori iskola kutatási területeit. A dokumentumban ismertetik a három képzési programot, a tanulmányi modulok tárgyait, a tárgyakhoz rendelt kredit értéket és a kredit teljesítés módját, valamint az ellenőrzés rendszerét. A minőségbiztosítási tervben szerepelnek a hallgatókkal és oktatókkal szemben támasztott követelmények folyamatos biztosításának és ellenőrzésének rendie, a doktori programok frissítésének előírásai, a törzstagok munkája értékelésének, új törzstagok megválasztásának kritériumai. A honlap jól szerkesztett és informatív, angol nyelven is elérhető. Az önértékelésben a C-SWOT analízis kellően részletes, a doktori iskola objektív és szubjektív, erős és gyenge pontjait egyaránt reálisan ismerteti. a törzstagok kutatási területe, közleményei, ill. a DI képzési terve és a témakiírások, továbbá a

- megadott tudományágak közötti koherencia: megfelel A törzstagok kutatási témái, publikációi programonként és a doktori iskola egészét tekintve is koherens egységet alkotnak. A közlemények, a különböző alprogramok szoros együttműködést, szakmai kooperációt jeleznek. Az eredményes oktatási és kutatási tevékenységet megfelelő számú, kiemelkedően színvonalas törzstag gárda garantálja.
- a doktori iskola vezetője az előírt feltételeknek: megfelel Császár Attila, a doktori iskola vezetője az MTA doktora, egyetemi tanár. Nemzetközileg elismert kutató, a hazai elméleti kémikus társadalom egyik meghatározó tagja. Nemzetközi mércével mérce is kiemelkedő tudománymetriai mutatókkal rendelkezik (közel 5000 független idézet, 300-hoz közelítő közleményszám). Az utánpótlás-nevelésben aktív szerepet vállalt, témavezetésével eddig hét doktorandusz szerzett PhD fokozatot, és további öt fokozatszerzés van folyamatban. A fentiek alapján minden szempontból eleget tesz a doktori iskola vezetőjétől elvártaknak.
- · doktori értekezések színvonala: megfelel, A véletlenszerűen áttekintett értekezések magas színvonalúak, alapos háttér-ismeretekről és saját eredményekről tanúskodnak, megfelelnek a doktori iskola szabályzatában rögzített feltételeknek, amely szerint a jelöltnek a disszertáció tárgyköréből rendelkeznie kell "legalább 2 nemzetközi, 0,5-nél nagyobb hatástényezőjű folyóiratban megjelent közleménnyel, és legalább az egyikben első szerzőként kell szerepelnie". A munkákban a disszertáció alapját jelentő közlemények száma viszonylag nagy eltérést mutat. A többszerzős publikációk esetében problémát jelenthet, hogy egy közleményt csak egy hallgató használhat fel, ezért javasolt a publikációs követelmények módosítása oly módon, hogy az említett anomália elkerülhető legyen.
- mesterképzésre épülés kritériumának: megfelel<sup>4</sup>
- a fokozatot szerzett hallgatókkal rendelkező törzstag elvárásoknak: megfelel<sup>3</sup>
- a felvett hallgatókkal kapcsolatos elvárásoknak: megfelel<sup>6</sup>

Ezen akkreditáció alapján e doktori iskola révén az intézmény fokozatadási joga kiterjed a következő tudományágra: kémiai tudományok.

Budapest, 2016. december 9.

Üdvözlettel:

## Lábjegyzetek:

<sup>1</sup> A megfelelt minősítésű törzstagok minimális száma 1 tudományágas iskola esetén 7, amelyben a 387/2012. sz. kormányrendelet szerint maximum 1 professor emeritust és 2 kutatóintézeti törzstagot lehet figyelembe venni

<sup>2</sup> A megfelelt minősítésű egyetemi tanár törzstagok minimális száma 1 tudományágas iskola esetén 4. 3 A doktori iskolákról szóló 387/2012. (XII.19) kormányrendelet 2.§ (1) bekezdése, s ennek nyemán a 2015. szeptember 30-án hatályba lépett 2015/1/IV, sz. MAB határozat értelmében a doktori iskola tórzstagjai között az egyetemi tanárok legyenek többségben, függetlenül a törzstagok tényleges számától.

<sup>4</sup> Minden, a doktori iskola által megadott tudományághoz kapcsolódó képzési ágban legyen az intézménynek legalább egy akkreditált mesterszakja.

<sup>5</sup> A doktori iskolának a működés első őt évében legyen egy tudományág esetén legalább őt, két tudományág esetén legalább nyolc végzett hallgatóval rendelkező törzstagja.

<sup>6</sup> A doktori iskolának a működés első három évében évente legyen legalább két-két felvett doktorandusz hallgatója.

The latest (2016) letter of accreditation of the ELTE PhD School of Chemistry with a list of the core members of the School

Csépe Valéria a MAB elnöke

To learn more about our programs, faculty, students, course offerings, facilities, and alumni, please visit phd.chem.elte.hu

# ANALYTICAL CHEMISTRY, MATERIALS SCIENCE, ELECTROCHEM-ISTRY, COLLOIDAL AND ENVIRONMENTAL CHEMISTRY

The Analytical Chemistry, Materials Science, Electrochemistry, Colloidal and Environmental Chemistry Program of the Hevesy György PhD School of Chemistry is led by Prof. Dr. Éva Kiss. The Program includes research on various subjects related to pure and applied chemistry. The focus is the preparation as well as the qualitative and quantitative characterization of complex material systems to determine their chemical and structural compositions and to understand related fundamental phenomena, such as self-assembly, pattern formation, oscillatiory reactions, formation and stability of nanostructural systems in the laboratory and also in the environment.

Novel material systems are produced regulary for special functions relating to potential applications in energetics and pharmaceutical or biomedical fields, while analytical techniques are applied for the study of various environmental processes. The facilities supporting the research activity cover of the program a wide range from coupled high-performance techniques of separation science, unique spectroscopies (Mössbauer and positron annihilation), and special electrochemical instrumentation to imaging or other techniques measuring interfacial and colloidal properties in the nanoscale (e.g., optical and atomic force microscopy, dynamic light scattering).

# THEORETICAL, PHYSICAL, AND STRUCTURAL CHEMISTRY

The **Theoretical**, **Physical**, and **Structural Chemistry Program** of the Hevesy György PhD School of Chemistry is led by Prof. Dr. Péter Surján. The Program is proud to offer advanced courses in the fields of statistical mechanics, quantum mechanics, quantum chemistry, molecular mechanics and molecular modelling, NMR spectroscopy, reaction mechanics, mass spectroscopy, computer-aided drug design, and nuclear chemistry. In addition to these courses, courses offered by other programs of the School are also available to the students enrolled to this Program.

The main emphasis of this Program is not only on high-quality research leading to new algorithms and methodologies and advanced codes in theoretical chemistry (including quantum chemistry), but also on the application of the existing and novel codes for computational chemistry research. Supervisors of the PhD students are available in the fields of quantum chemistry, theoretical physical chemistry, as well as in various classical and modern spectroscopies, including laser spectroscopy.

Furthermore, courses in special topics, like advanced density functional theory or quantum theory of nanostructures, have been taken by some of the Program's students at other PhD schools.



The **Synthetic**, **Organic**, **and Biomolecular Chemistry Program** of the Hevesy György PhD School of Chemistry is led by Prof. Dr. András Perczel, member of the Hungarian Academy of Sciences and recipient of the 2011 Bolyai Prize. This complex Program incorporates synthetic organic, bio- and macromolecular, peptide and protein chemistry, and focuses on new, original and creative basic and applied research of the associated and related scientific fields.

The Program involves about two dozen faculty members of the Institute of Chemistry and associated departments and institutes and the research is carried out with the help of post-doctoral associates as well as undergraduate students. Members of this Program work together on fascinating projects, including the total synthesis of natural products, organo- and metal-catalysis, sensors, cross coupling reactions, heterocyclic chemistry, peptide and protein synthesis and bacterial expression, and molecular modelling. Advanced spectroscopic (CNMR, MS, ECD, VCD, FT-IR) and diffraction (X-ray) techniques and associated interdisciplinary fields such as bioorganic chemistry, bio-, supramolecular and environmental chemistry are among the most current topics of the Program. The Program gives the opportunity to learn the necessary theoretical background of core areas of chemistry combined with hands-on laboratory training and spectroscopic knowledge to mature independent and highly successful researchers. Most research laboratories within the program combine different experimental and novel synthetic methods with computational techniques to explore frontier areas of chemical, structural and molecular sciences.





Hevesy György (1885-1966), a scientist without borders

to most of the rest of the world as George (Charles) home city, Copenhagen). In 1944, Hevesy received de Hevesy (or Georg Karl von Hevesy), was born in the 1943 Nobel Prize for Chemistry for "his work on the use of isotopes as tracers in the study of chem-Budapest into an aristocratic family of Jewish descent, as the fifth of eight children. His father was ical processes". When Hevesy György started his university educa-Lajos Hevesy-Bischitz, his mother's name was Eugénia (Jenny) Schossberger. Hevesy György had a tion at the University of Budapest (the name of Eöthappy childhood spent both in Budapest and Tura, vös Loránd University (ELTE) at the time), he wanted where the beautiful Schossberger castle built in the to become a chemical engineer. He subsequently Renaissance revival architecture style was in the moved to Freiburg in Breisgau, had his studies comhands of the family (note that the public elemenpleted in Freiburg and Berlin, and eventually retary school in Tura now bears the name of Hevesy ceived his PhD degree at the University of Freiburg György). Hevesy graduated in 1903 from the Gymin 1908. nasium of the Piarist order, founded in 1717, where he After finishing his studies, Hevesy György became received outstanding education, as so many other an assistant in the Institute of Physical Chemistry in prominent students of this high school, including Zürich and then moved to Karlsruhe. During his PhD Loránd Eötvös, Ede (Edward) Teller, and György years and during the time in Zürich and Karlsruhe (George) Oláh (Nobel prize in chemistry in 1994). he worked more or less as an analytical and phys-Hevesy György converted to catholicism when he ical chemist, studied electrochemical processes in continued his education in Budapest at the Univermetallurgy in considerable detail and determined, sity of Budapest. for example, the solubility of sodium in molten sodi-Hevesy György was a true scientist without borders. um hydroxide.

Hevesy György (August 1, 1885 – July 5, 1966), known

On the one hand, as he lived through the turbulent In 1911 Hevesy moved to Manchester to work under first half of the 20th century within the boundaries the guidance of Ernest Rutherford on the hot-topic of Europe, he had to cross changing political borresearch area of radioactivity. This area of research ders a number of times during his life, perhaps unwas new to Hevesy but with his open mind, curiwillingly most of the time, and carried Hungarian, osity, and solid background in chemistry he fitted state of Baden, and Swedish citizenships. On the very well this emerging field. In 1912 Niels Bohr paid other hand, he willingly crossed and changed scia visit to Manchester and this started the lifelong entific borders many times, those between chemfriendship of Hevesy and Bohr, which became so istry, physics, and biology, following the true spirit important later on for more than just scientific reasons. During these years Hevesy spent much time of natural sciences. As a result, Hevesy György is known to the world as the founder of radioanalytical in the UK, in Austria (at the Radium Institute of Vienna), as well as in Hungary, where he also served as chemistry, the "father of nuclear medicine", the initiator of nuclear physiology, and the discoverer of the a soldier during World War I. chemical element hafnium (Hf, element number 72,

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named after the Latin name of his beloved adopted



In 1918 Loránd Eötvös proposed to Hevesy to head the Institute of Applied Physics of the University of Budapest. Somewhat later Hevesy received his professorship from Tódor Kármán (Theodore von Karman), the son of Mór Kármán, who founded the so-called "Mintagimnázium" (then the "Budapesti Magyar Királyi Középiskolai Tanárképző", today this high school forms an integral part of Eötvös Loránd University). Tódor Kármán was in charge of university affairs of the time when the Republic of Councils, a communist-type government, was in power for 133 days following March 21, 1919. Hevesy György obtained an independent chair of physical chemistry at the University of Budapest. In 1920, during exceptionally turbulent times in the history of Hungary, Professor Hevesy had to leave his first permanently-looking university position and he decided to leave the country, as well.

Accepting an invitation from his friend, Niels Bohr, Hevesy joined the Bohr Institute in Copenhagen and returned to his pre-WWI interest on the biological application of radioactive tracers. Then, from 1926 to 1934 Hevesy was the professor and director of the Institute of Physical Chemistry at the University of Freiburg. Note that Freiburg remained close to the heart of Hevesy György, he returned there later in his life. In 1934 the political changes in Germany made Hevesy to decide to leave his professorship at the University of Freiburg and leave Germany at this time. He returned to Copenhagen to the Institute for Theoretical Physics, again accepting the help Bohr offered to him. In an unexpected move in 1940, the German army occupied Denmark. In October 1934 Bohr fled to Sweden with his family, a move followed by Hevesy somewhat later.

Due partly to the turbulent times in Europe and partly to the desire to conduct research redefining the boundaries of science, Hevesy György became a true European citizen, who lived and worked for a prolonged time in a number of European countries, including Hungary, Germany, Austria, Switzerland, United Kingdom, Denmark, and Sweden. Professor Hevesy was hugely devoted to his research. Nevertheless, he was also a devoted father of his children. To quote his son, Georg Ludvig de Hevesy, living in Sweden, "I can describe my father as the most loving and kind person you could imagine. He was always willing to help those who asked him in all kind of matters. He was obsessed with his work, it was almost like a religion for him, and had no desire to be entertained as his scientific work was his all immersive interest. True, he was often absent minded but at the same time he seemed to observe what was happening around him and was always willing to assist his family."

Honouring Hevesy György, the "Georg von Hevesy Foundation" was formed in 1969 in Zürich. The Foundation regularly awarded the "Georg von Hevesy Prize" to young researchers, appointed "Georg von Hevesy Lecturers" and issued the "Georg von Hevesy Memorial Medal". In Hungary, two awards have been named after Hevesy György. One was set up

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by the Somos Foundation and provided the "Hevesy György Award for Nuclear Safety" for a number of Hungarian nuclear researchers in different categories. The "Hevesy Medal Award", founded by a former member of Eötvös Loránd University, Professor Tibor Braun, is the premier international award of excellence honoring outstanding achievements in radioanalytical and nuclear chemistry (the International Committee on Activation Analysis of the Modern Trends in Activation Analysis Conferences (ICAA-MTAA) is currently responsible for the administration of the award). A national competition in chemistry is also named after Hevesy György. There are also streets named after him, for example in Budapest (next to the Lágymányos Campus of ELTE), and Kaposvár, Polgárdi, and Tura.

# OUTSTANDING FORMER PHD STUDENTS OF THE HEVESY GYÖRGY PHD SCHOOL OF CHEMISTRY



# DR. ORSOLYA BARABÁS Junior Prima Award, 2010

Dr. Barabás has always been deeply fascinated by the intricate molecular interplay of proteins and nucleic acids that underlies all vital functions of life. During her PhD studies with Professors Gábor Náray-Szabó (Department of Theoretical Chemistry, ELTE) and Beáta G. Vértessy (Institute of Enzymology, Hungarian Academy of Sciences), she studied nucleic acid metabolism and described the catalytic mechanism of the ubiquitous dUTPase enzyme in preventive genome defense. This work provided the first high-resolution molecular movie of enzymatic phosphodiester hydrolysis and triggered numerous high impact follow-up studies in nucleases and polymerases. For her postdoctoral research, she joined Dr. Fred Dyda at the National Institutes of Health (USA) to study enzymes that act on larger blocks of DNA and studied transposases that mobilize distinct DNA segments in genomes. She discovered and visualized the mechanism and target site selection of a novel transposase class that integrates their genetic cargo to specific genomic sequences, exhibiting an extraordinary promise for genetic engineering applications. Driven by the cleverness of these widespread genomic parasites and

their far-reaching medical and biotechnological relevance, studying transposition has become the main focus of her independent research program. Since 2009, Dr. Barabás has been a Group Leader at the European Molecular Biology Laboratory (EMBL) in Heidelberg. The overarching goal of her research group is the understanding of mobile genetic elements and their impact on biology and disease. Her vision is to use structural-mechanistic insights to mitigate the adverse effects of transposition in disease and to facilitate the development of novel tools for research and therapy. Her interdisciplinary team unites computational genomics, biochemistry, biophysics, structural biology, cell biology, microscopy, and microbiology expertise, which are further extended with systems biology, animal physiology, and medicine in diverse international collaborations. She strongly believes that true understanding of complex biological problems requires integration of insights from several disciplines. In addition to research, Dr. Barabás is committed to teaching and mentoring: she supervised more than 20 PhD students, postdoctoral fellows, undergraduates and technical staff.

Zoltán Bánóczi was born in 1979. In elementary school, chemistry seemed especially interesting to him. Thus, he continued his secondary school studies in Tiszavasvári as a student specializing in chemistry. The laboratory practices were held at the company "Alkaloida", which had great influence on him and deepened his interest in chemistry. He was admitted to the MSc in Chemistry training program of ELTE in 1997. He was a thirdyear student when he joined Prof. Mező in the Research Group of Peptide Chemistry (RGPC). He took part in the Students` National Conference of Science conference (OTDK) in 2003 and recieved a second prize. In 2002, he received the Excellent student prize of Eötvös Loránd University. During his time at RGPC he got experience in peptide chemistry, the synthesis of peptides using different strategies, and purification and chemical characterisation of peptides. He pursued his PhD studies in this field under the supervision of Prof. Hudecz. During his PhD studies he extended his knowledge about peptide synthesis and practiced bioconjugates chemistry, the synthesis of

# **DR. ZOLTÁN BÁNÓCZI** Junior Prima Award, 2008

bioconjugates of peptides and polypeptides. In 2008, he won the Foundation for Hungarian Drug Development with his PhD thesis. In the same year he won the Publication Award of the Lajos Kisfaludy Foundation and two other awards, the Young Investigator Award of the Hungarian Academy of Sciences and the Junior Prima Award. After successfully defending his PhD thesis, Dr. Bánóczi joined the RGPC and continued to pursue his research on the field of cell-penetrating peptides. In 2009, he received a Bolyai János research fellowship from the Hungarian Academy of Sciences. In 2014, he received the Zemplén Géza Award from the Hungarian Academy of Sciences. In 2015, he became member of the Department of Organic Chemistry, where he has been carrying out his research on peptides and bioconjugates. In 2017, one of his publications was awarded again with a Publication Award of the Lajos Kisfaludy Foundation. He has been taking part in collaboration in several grants and completed several study hips abroad.



DR. TAMÁS BEKE-SOMFAI MTA Momentum Grant, 2016-

Dr. Tamás Beke-Somfai is currently a group leader in the Institute of Materials and Environmental Chemistry at the Research Centre for Natural Sciences (RCNS), Budapest. He obtained his MSc in chemistry (2001) and his PhD, with summa cum laude, in structural chemistry (2007) from Eötvös Loránd University, under the supervision of Prof. András Perczel. In 2005, he spent six months in the supercomputer centre CINECA in Bologna, as a high-performance computing fellow. After his PhD studies, Dr. Beke-Somfai worked as a post-doctoral fellow, and later as a guest researcher at Chalmers University of Technology, Gothenburg, Sweden (2008-2015). In 2015, he returned to Hungary as a Marie Sklodowska-Curie fellow and took a position at the Research Centre for Natural Sciences of the Hungarian Academy of Sciences.

He currently leads the Biomolecular Self-Assembly group (http://bionano.ttk.mta.hu/) established through the 'Momentum' excellence program of the Hungarian Academy of Sciences, which he was awarded in 2016. His research is centered around the theoretical and experimental investigation of natural and non-natural peptide assemblies, enzyme catalysis, polarized light spectroscopy, and membrane-biomolecule interactions. Dr. Beke-Somfai is the author of more than 40 publications in international peer reviewed journals several published in leading international scientific journals, such as PNAS, JACS, and Chemical Reviews. Besides research activities, he also teaches undergraduate students at Pázmány Péter Catholic University. Tamás and his wife, Eszter have four children, Ráhel, Máté, Csenge, and Erik.



Dr. Zsolt Bodai undertook his BSc studies in chemistry at Eötvös Loránd University. He became member of the Joint Research and Training Laboratory on Separation Techniques (EKOL) in 2009 and prepared his BSc thesis under the supervision of Dr. Zsuzsanna Eke, head of EKOL. EKOL is a laboratory equipped with the latest GC and HPLC coupled mass spectrometry systems, maintained by ELTE and Wessling International Research and Education Center to develop, apply and teach chromatography and mass spectrometry methods. Dr. Bodai continued his work at EKOL during his MSc years. In 2011, he started a new project on the determination of human milk oligosaccharides in baby food, which became the topic of his MSc thesis. He started his PhD research at EKOL to examine migration of different chemical compounds from food packaging. He finished his PhD with three first-author publications in Q1 journals. In parallel with his Phd studies, Dr. Bodai's passion for chromatography and mass spectrometry drove him to work with Prof. Kremmer at the Hungarian Academy of Sciences. There, he joined a research proj-

# DR. ZSOLT BODAI Junior Prima Award, 2017

ect working on a glycoprotein as a diagnostic marker in cancer and he developed HPLC-MS methods to monitor post-translation modification of this protein. His enduring desire to work in cancer research enabled him to take up a post-doctoral position at Imperial College London in 2015, joining the Department of Surgery and Cancer under the guidance of Prof. Zoltan Takáts. At Imperial, Dr. Bodai has worked on a variety of projects to improve ambient ionisation methods, and biomarker discovery for cancer and sepsis using mass spectrometry. It was his keen interest and application that led to his promotion to lead the intelligent Knife (iKnife) team. iKnife is a specialized mass spectrometer using electrosurgical knifes as an ion source which can give (near) real time, in-vivo, in situ tissue classification to surgeons at the operating table. After three enjoyable years of research at Imperial, Dr. Bodai accepted a post-doctoral position at the University of California San Diego.





DR. GÁBOR CZAKÓ Junior Prima Award, 2012



Gábor Czakó received his PhD in theoretical molecular spectroscopy from Eötvös Loránd University in 2007. During his PhD years he worked under the supervision of Professor Attila G. Császár and Dr. Viktor Szalay. Starting January 2008, he spent nearly 4 years as a postdoctoral fellow at Emory University, Atlanta, GA, USA, where he started to work in the field of chemical reaction dynamics. In December 2011 he returned to Hungary and became a research associate at the Institute of Chemistry of ELTE. In 2015 he was invited to join the faculty of the Department of Physical Chemistry and Materials Science, University of Szeged, where he is currently an assistant professor and the head of the Computational Reaction Dynamics Research Group. His current research interests include potential energy surface developments, reaction dynamics computations, and high-accuracy ab initio thermochemistry. He has several groundbreaking research achievements, most notably the discovery of a new reaction pathway, named double inversion, which was highlighted by National Geographic Hungary, Index.hu, and the Hungarian Television. In 2012 he received the Bolyai Research Fellowship and the Junior Polányi Prize of the Hungarian Academy of Sciences and the prestigious Junior Prima Prize, given to the most outstanding Hungarian scientists under the age of 33. In 2013 he became a Magyary research scholar and in 2014 he received the Bolyai Fellowship again. In 2015 he was recognized as one of the top reviewers of the Journal of Chemical Physics. In 2017 he obtained the Doctor of the Hungarian Academy of Sciences title, the D.Sc. degree in Hungary, and became the youngest doctor of the Academy. His publication record includes papers in high-impact scientific journals such as Science, PNAS, Nature Chemistry, and Nature Communications. Mónika Fuxreiter is a full professor at the Department of Biochemistry and Molecular Biology, Medical Faculty, University of Debrecen and the group leader of the MTA-DE Laboratory of Protein Dynamics. She graduated in 1993 as a chemist from Eötvös Loránd University, where she also received her PhD in 1996 in protein crystallography and quantum chemical approaches to enzymatic catalysis. In 1996 she joined the group of Arieh Warshel (USC, Los Angeles), where she investigated the catalytic mechanism of acetylcholine esterase using multiscale (QM/MM) methods (when Professor Warshel was awarded a Nobel prize in chemistry in 2013, he acknowledged the contributions of Professor Fuxreiter). She continued to study molecular mechanisms of DNA repair enzymes at Rutgers University (NJ) and Mount Sinai School of Medicine (NYU, NY). She returned to Hungary in 2000, and was a senior scientist at the Institute of Enzymology until 2010. From 2002, she started to study recognition mechanisms of proteins lacking a well-defined structure in the native state. In 2008, she proposed the concept of fuzzy pro-

# DR. FUXREITER MÓNIKA MTA Momentum Grant, 2012-2017

tein complexes. In 2010-2011 she was a visiting scientist at the Weizmann Institute, Cambridge University and LMB MRC, Cambridge. In 2012, she joined the University of Debrecen, received the Momentum award of the Hungarian Academy of Sciences and founded the Laboratory of Protein Dynamics. In 2013, she received the DSc degree in biology, habilitated in 2015, and was appointed to full professor in 2016. The group of Professor Fuxreiter focuses on understanding conformational heterogeneity and fuzziness in protein function. CRC Press published two books of Professor Fuxreiter on the theme. She is in the Editorial board of J. Mol. Biol., Biophys. J., and J. Biol. Chem. Her theory on protein fuzziness has also been accredited in medical education in US, and it is among the top 10% visited lectures. Professor Fuxreiter received numerous awards, in 2009 the L'Oreal-Unesco Women for Science in Hungary. She is mother of three children.





DR. MIHÁLY KÁLLAY ERC Starting Grant, 2007-2012 MTA Momentum Grant, 2013-2018 NKFIH Frontline Grant, 2018-

Mihály Kállay received his PhD degree in quantum chemistry from Eötvös Loránd University in 2001. After a post-doctoral position in Germany, he joined the Department of Physical Chemistry and Materials Science at the Budapest University of Technology and Economics. Currently he is full professor and the head of the department.

Dr. Kállay developed automated programming tools, which largely facilitate the implementation of complicated quantum chemical approaches. These improvements enabled the efficient implementation of high-accuracy methods and opened new ways for the calculation of molecular properties with near experimental accuracy. The new schemes have been applied to chemical problems, in particular, to the calculation of thermochemical properties of species relevant to combustion and atmospheric chemistry, establishing new reference data and often resulting in the revision of the experimental values. In the last couple of years his group also made considerable progress in the development of local correlation approaches, which utilize that the interaction of electrons localized far from each other can be efficiently approximated and enable accurate quantum chemical calculations for large systems. The computation time of the developed approaches scales linearly with the system size, while their memory and disk space requirements are independent thereof. Thanks to these features, the new methods can be applied to molecules of more than two thousand atoms. The developed software is available to the scientific community (see www.mrcc.hu) and is used by numerous research groups for accurate electronic structure calculations. There are also several method development projects that follow the ideas put forth by Dr. Kállay.

For his achievements, he was awarded several honors, including the Medal of the International Academy of Quantum Molecular Science. He also successfully applied for several prestigious research grants, including the Starting Grant of the European Research Council, the "Momentum" Program of the Hungarian Academy of Sciences, and the "Frontline" Research Excellence Program of the National Research, Development, and Innovation Office of Hungary.



Dr. Mátyus holds a permanent academic position at Eötvös Loránd University, currently at the assistant professor level. Edit Mátyus has been passionate for sciences since her early childhood, she attended the science class of the Apáczai Grammar School - one of the renowned training schools of ELTE - and won silver medals on the International Chemistry Olympiad in 2000 and 2001. Edit Mátyus studied chemistry at ELTE, carried out doctoral research with Prof. Attila G. Császár, and defended her PhD dissertation in November 2009 about the development of "Universal variational approaches for the quantum nuclear motion problem". In the same year she was awarded a two-year ETH Fellowship to start her post-doctoral studies at ETH Zürich with Prof. Markus Reiher in 2010. Between 2012 and 2016 she was a research fellow at ELTE, being on inter-

# DR. EDIT MÁTYUS Junior Prima Award, 2011 PROMYS grant, 2016-

mission between 2014 and 2016 to carry out research in Cambridge with Prof. Stuart Althorpe. In 2016, she won a five-year PROMYS Grant of the Swiss National Science Foundation to start an independent research group in Budapest. Edit and her husband, Ádám, are happy parents of two children, Dániel and Zsófia.

The Molecular Quantum Dynamics Research Group (www.compchem.hu) led by Dr. Mátyus focuses on the quantum mechanical description of molecular phenomena, the understanding of classical molecular concepts from a fully quantum mechanical description, and theoretical developments for precision spectroscopy by going much beyond the common Born-Oppenheimer and non-relativistic approximations of quantum chemistry.



DR. ZOLTÁN NOVÁK MTA Momentum Grant, 2012-2017

Zoltán Novák (44) was born in Budapest. He received his high school diploma in 1992, then a chemist technician degree in 1993 from the Irinyi János High School for Chemical Industry. He was admitted to the Faculty of Natural Sciences of Eötvös Loránd University in 1994 and graduated as a chemist in 1999. From 1999, he performed homogeneous catalytic studies in the laboratory of Prof. István T. Horváth at ELTE, then he worked as a researcher at Ubichem Research Ltd. He started his PhD studies on the development of palladium-catalyzed transformations for the synthesis of heterocyclic molecules in 2001 in the group of Dr. András Kotschy at ELTE. He defended his thesis in 2004, and received his PhD degree from Eötvös Loránd University with summa cum laude. As a postdoctoral researcher supported by the Hungarian-American Enterprise Scholarship Fund he worked at California Institute of Technology in the group of Prof. Brian M. Stoltz, where he developed new enantioselective catalytic methodologies. From 2006, he continued his research at ELTE as an OTKA postdoctoral scholar in the laboratory of Dr. András Kotschy, studying sequential cross-coupling reactions. In 2007, he became

a faculty member at the Department of Organic Chemistry of ELTE and started his independent research career. From 2008 he worked as an assistant professor and from 2017 as an associate professor. In 2012, he received the prestigious "Momentum" research grant of the Hungarian Academy of Sciences and established the "Laboratory of Catalysis and Organic Synthesis". His research group is working on the development of new transition metal catalyzed and photocatalyzed reactions for the synthesis and functionalization of aromatic and heteroaromatic systems, supported by the research grants of the National Research, Development and Innovation Office. Besides the academic research, his research group has been performing target oriented research for the Servier Research Institute of Medicinal Chemistry for 8 years.



András Rokob obtained his MSc degree in chemistry from Eötvös Loránd University in 2006 as a member of the Bolyai College. Following undergraduate experiences in synthetic organic chemistry in Dr. Tibor Soós' organocatalysis research group and in the semiconductor industry via an internship at AMD, he wrote his diploma thesis on the measurement of surface stress changes of solid electrodes in Prof. Győző Láng's laboratory. András Rokob then signed up for a PhD in the PhD School of Chemistry of Eötvös Loránd University. His advisor was Dr. Imre Pápai of the Chemical Research Center of the Hungarian Academy of Sciences, and the topic of choice was the computational study of reaction mechanisms. Right around that time, some exciting discoveries happened in the area of metal-free hydrogen activation. Though not originally planned so, the involved systems (the so-called "Frustrated Lewis Pairs") became the main focus of András Rokob's PhD research. After his defense in 2010, Dr. Rokob moved to Prague to pursue postdoctoral studies in Dr. Lubomír Rulíšek's theoretical bioinorganic chemistry group. Besides acquiring a decent knowledge of the Czech language, he

# DR. TIBOR ANDRÁS ROKOB Junior Prima Award, 2012

was involved in combined quantum mechanical and molecular mechanical calculations revealing mechanistic details of bond activation processes in iron-containing enzymes. Metalloenzymes remained the main focus of his research when Dr. Rokob returned to Budapest and became a fellow in the Research Centre for Natural Sciences from 2012 to 2016. Dr. Rokob's research in this period was supported by a Bolyai Scholarship and by a grant from the national funding agency (OTKA). It was during this time that Dr. Rokob was awarded the Junior Prima Prize. The Prague years also saw the beginning of a scientific collaboration with his wife, Dr. Ágnes Révész, a post-doctoral researcher in the late Dr. Detlef Schröder's group at that time. Dr. Rokob and Dr. Révész published several joint papers in the field of mass spectrometry. In 2016, Dr. Rokob decided to leave bond activation for bond markets, and took a position at MSCI, a New York-headquartered provider of indices and portfolio analytics tools for institutional investors. He is involved in research and product design related to credit risk and bank capital regulations. With his wife Ágnes, they are proud parents of their twins, Anita and Sámuel.





DR. TIBOR SOÓS Junior Prima Award, 2007 MTA Momentum Grant, 2010-2015

Tibor Soós was born in Miskolc in 1972 and obtained his MSc degree from Eötvös Loránd University in 1995. He earned his PhD degree in chemistry also from Eötvös Loránd University (1998), working under the guidance of Prof. György Hajós (Hungarian Academy of Sciences, Institute of Organic and Biomolecular Chemistry). The PhD research of Dr. Soós focused on method developments in heterocyclic chemistry. Dr. Soós has subsequently held post-doctoral positions at the University of Utah (working with Prof. John A. Gladysz, 1999) and the University of Erlangen (working with Prof. John A. Gladysz through a Humboldt fellowship, 2000-2001), and explored the utilization of fluorous chemistry in catalysis. After returning to the Hungarian Academy of Sciences in 2002, he was appointed to a group-leader position and

started his independent research career. His research spans a wide range of problems in the general areas of synthetic and mechanistic organic chemistry and catalysis. Among many other achievements, Dr. Soós has developed bifunctional Cinchona-based thiourea organocatalysts, which have been broadly utilized in academic and industrial settings. Dr. Soós' current research focuses on the development of frustrated Lewis pairs for synthetic applications. Dr. Soós has been decorated by several scientific awards, such as the Junior Prima Award (2007), the Kajtár (2008) and the Bruckner (2009) Awards, and the George A. Oláh Award (2015). Since 2016, Dr. Soós serves as the director of the Institute of Organic Chemistry of the Hungarian Academy of Sciences.



Professor Takáts has obtained his PhD degree from Eötvös Loránd University in 2003, working in the group of Dr. Károly Vékey. Then he has worked as a post-doctoral research associate at Purdue University, Indiana, USA. After returning to Hungary, he served as Director of the Cell Screen Research Centre and also as Head of Newborn Screening and Metabolic Diagnostic Laboratory at Semmelweis University, Budapest.

Professor Takats was awarded the Starting Grant by the European Research Council in 2008 and he subsequently, became a Junior Research Group Leader at Justus Liebig University, Gießen, Germany. He moved to the United Kingdom in 2012 and currently works as a Professor of Analytical Chemistry at Imperial College London.

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# DR. ZOLTÁN TAKÁTS ERC Starting Grant, 2008-2013 ERC Consolidator Grant, 2014-

Professor Takats has pursued pioneering research in mass spectrometry and he is one of the founders of the field of 'Ambient Mass Spectrometry'. He is the primary inventor of six mass spectrometric ionization techniques and author of 78 peer-reviewed publications. He was the recipient of the prestigious Mattauch-Herzog Award of the German Mass Spectrometry Society and the Hungarian Star Award for Outstanding Innovators. He is the founder of Prosolia Inc, Medimass Ltd and Massprom Ltd, all companies pursuing analytical and medical device development.

# DR. GYÖRGY VANKÓ MTA Momentum Grant: 2103-2018

György Vankó is a group leader at the Wigner Research Centre for Physics of the Hungarian Academy of Sciences (HAS). His main research topic is the investigation and development of transition-metal based functional molecules, using a combination of the tools of high-energy resolution X-ray spectroscopy, femtochemistry and quantum chemistry. He obtained his PhD degree in 2000 in the laboratory of the late Prof. Attila Vértes, applying transmission and emission Mössbauer spectroscopy to various materials science problems. During his studies at the Eötvös Loránd University he developed a strong interest for understanding molecular electronic structure with experimental and theoretical methods, and also for novel experimental techniques based on synchrotron radiation. Having received his PhD, he worked for the European Synchrotron Radiation Facility at the Inelastic Scattering beamline ID16, first as a postdoc, then for another 5 years as a scientist taking care of the scientific program on electronic excitations of the beamline. His own research topics there included electronic bistability and materials under extreme conditions. He returned to his home country in August 2007 and started to

build a group dedicated to high-energy- resolution X-ray spectroscopy based research. In 2010 he received a grant from the ERC to use static and dynamic X-ray spectroscopy to study correlated oxides as well as switchable molecular systems, which also made it possible to build up an X-ray laboratory. He was among the first to implement X-ray spectroscopy probes for time-resolved studies at synchrotrons and X-ray free electron lasers. With a grant from the Momentum Program of the HAS in 2013, the group could also construct an instrument for femtosecond-resolved transient optical absorption spectroscopy. The application of ultrafast X-ray and optical spectroscopy, together with quantum chemistry calculations, provide a solid base for the group, and make it competitive on the international level. György Vankó received the Young Scientist Award of the HAS in 2001, the Schmid Rezső Prize of the Roland Eötvös Physical Society in 2009, and the Bolyai Plaquette of the HAS in 2011. He published more than 100 scientific papers that received over 3000 independent citations.



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Hydrophilic trans-Cyclooctenylated Noncanonical Amino Acids for Fast Intracellular Protein Labeling, by **Eszter Kozma**, I. Nikić, B. R. Varga, I. V. Aramburu, J.-H. Kang, O. T. Fackler, E. A. Lemke, P. Kele, ChemBioChem **2016**, 17, 1518-1524.

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Bioorthogonal double-fluorogenic siliconrhodamine probes for intracellular super-resolution microscopy, by **Eszter Kozma**, G. Estrada Girona, G. Paci, E. A. Lemke, and P. Kele, Chem. Comm. **2017**, 53, 6696-6699.



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Bioorthogonal double-fluorogenic siliconrhodamine probes for intracellular super-resolution microscopy



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# 19/2016

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Multilevel Changes in Protein Dynamics upon Complex Formation of the Calcium-Loaded S100A4 with a Nonmuscle Myosin IIA Tail Fragment, by **Gyula Pálfy**, B. Kiss , L. Nyitray, and A. Bodor, ChemBioChem **2016**, 17,1829-1838.

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PAPER Attila G. Császár, Thierry Stoecklin et al. Complex rovibrational dynamics of the Ar-NO<sup>+</sup> complex

Complex rovibrational dynamics of the Ar·NO+ complex, by **Dóra Papp, János Sarka**, T. Szidarovszky, A. G. Császár, E. Máty-us, M. Hochlaf, and T. Stoecklin, Phys. Chem. Chem. Phys. **2017,** 19, 8152-8160. Reproduced with permission from The Royal Society of Chemistry.

# Volume 19 Number 12 28 March 2017 Pages 8123-8622

# SELECTED RESEARCH ADVISORS OF THE HEVESY GYÖRGY PHD SCHOOL OF CHEMISTRY



# PROFESSOR ATTILA G. CSÁSZÁR Széchenyi Prize, 2017

Professor Császár received his MSc degree from Eötvös Loránd University in 1983. He worked at a number of foreign universities, including Stanford University and the University of Cambridge. He has been interested in studies of molecular structure, high-resolution molecular spectra, and exotic chemical phenomena, like tunnelling and rovibronic resonances. He helped to develop several new methodologies in quantum chemistry and molecular spectroscopy, significantly contributing to the fourth-age methodologies of quantum chemistry. He is head of the MTA-ELTE Complex Chemical Systems Research Group. His close to 250 publications received more than 9000 citations.



Professor Fogarasi started his scientific career with a PhD in physical chemistry which he received in 1968. His principal field of interest is molecular structure, studied by techniques of molecular spectroscopy and primarily quantum chemistry. He has made significant contributions to the development of theoretical methods, now in widespread use, for computing infrared spectra of gas-phase molecules. More recently he studied hydration and tautomerization of cytosine, including molecular dynamics simulations.



Professor Furka obtained his PhD from the University of Szeged in 1959. In 1964/65 he was a post-doctoral fellow in the Department of Biochemistry, University of Alberta Edmonton. He joined Eötvös Loránd University in 1967, where he held the position of Professor of Organic Chemistry between 1972 and 2001. For 5 years in this period, he was a scientific advisor at Advanced ChemTech, Inc., Louisville, KY, USA. He is best known for the invention of combinatorial chemistry. In 2001 he was named the Honorary President of the European Society of Combinatorial Sciences.



Professor Inzelt served Eötvös Loránd University in various significant roles, he was a founder program leader of the PhD School of Chemistry and then its head (1998–2016), a Vice Rector for Education and Research (1994–1997), and head of the Institute of Chemistry (1999–2006). Professor Inzelt was awarded the title of Fellow of the International Society of Electrochemistry in 2009. He carried out research in the fields of modified and polymer-film electrodes, conducting polymers, electroanalysis, electrosorption, electrochemical oscillations, organic electrochemistry, solid state electrochemistry, and fuel cells. He has a long-standing interest in the history of chemistry.

# PROFESSOR ÁRPÁD FURKA

# PROFESSOR EMERITUS GYÖRGY INZELT



# PROFESSOR EMERITUS MIKLÓS ORBÁN Széchenyi Prize, 1990 Full member of Hungarian Academy of Sciences

The primary objective of the research of Professor Orbán has been the design, production, and study of chemical systems showing periodic behavior in time and space. Periodicity in chemical systems emerges in two essential forms, these are the oscillatory chemical reactions and the stationary or moving pattern formations. The research team led by Professor Orbán successfully produced and characterized the great majority of the known liquid-phase oscillatory reactions and self-organized structures, using a semiempirical design method developed in cooperation with US and French scientists. These oscillators are widely used in different laboratories as model systems to study nonlinear dynamical phenomena.



PROFESSOR ANDRÁS PERCZEL Bolyai Prize, 2011 Full member of Hungarian Academy of Sciences

Professor Perczel is the head of the Department of Organic Chemistry and the MTA-ELTE Protein Modelling Research Group. The research of Professor Perczel has focused on the structural (NMR and X-ray) and kiroptical properties (ECD and VCD) of biomolecules, carbonhydrates, polypeptides, and proteins, with special emphasis on amyloid formation, the molecular background of tumors, and diabetes. He is the author and co-author of about 240 scientific publications which received more than 6000 citations.



Professor Szalay graduated from Eötvös Loránd University in 1986 and received his PhD degree from the University of Vienna in 1989. He worked as a researcher in the University of Florida, the University of Mainz and the University of Texas, and was a visiting professor at Reims University. The research of Professor Szalay focused on the development of quantum chemical methods and the examination of excited electronic states. For his scientific work, he received the Polányi Award in 2015 and shared the Széchenyi Prize, with Attila G. Császár and Géza Fogarasi, in 2017.



Széchenyi Prize, 1994

Professor Sohár was born in 1936 in Budapest. He studied chemistry at the Technical University of Budapest, where he graduated in 1959. He worked as Head of the Spectroscopic Department at EGIS Pharmaceuticals between 1980 and 1991, and was the head of the Department of General and Inorganic Chemistry of Eötvös Loránd University between 1992 and 2000. His research interests include structure elucidation, stereochemical and spectroscopic properties of organic, organo-metallic and inorganic compounds by nuclear magnetic resonance and infrared spectroscopies. He published more than 450 papers, presented more than 500 scientific lectures, and he is the author of 6 books.

PROFESSOR PÉTER G. SZALAY

**PROFESSOR EMERITUS PÁL SOHÁR** Full member of Hungarian Academy of Sciences



# PROFESSOR GÁBOR NÁRAY-SZABÓ Full member of Hungarian Academy of Sciences

Professor Gábor Náray-Szabó graduated in 1967 and started his scientific career with molecular orbital calculations on small organic molecules. He developed linearly scaling quantum mechanical methods for the calculation of molecular electrostatic potential maps and enzyme mechanisms. In 1988, he spent three months in the laboratory of Professor Arieh Warshel (Nobel Prize in chemistry, 2013), where they addressed electrostatic catalysis in serine proteases. During the 1990s he established a protein crystallography laboratory at the Institute of Chemistry of ELTE. He is Doctor Honoris Causa at the Universitatea de Vest (Timisoara), member of the Académie Européenne (Paris) and the European Academy of Sciences and Arts (Salzburg).



PROFESSOR FERENC HUDECZ Full member of Hungarian Academy of Sciences

Professor Hudecz served as Head of the Department of Organic Chemistry (2006/2007, 2010-2016) and as Head of the MTA-ELTE Research Group of Peptide Chemistry (1999-2017). He obtained his PhD in 1980 and received his DSc in 1993. He was visiting Professor at the Wistar Institute in Philadelphia, USA (1983/84), at the University of Nottingham, UK (20 months during 1988 and 1994), at the Kumamoto University (1992), and at the Institute of Protein Research (Osaka University, Japan, 1999/2000) and at the University of Konstanz, Germany (2001, 2004). He tutored 17 PhD students. Professor Hudecz was Rector of Eötvös Loránd University (2006-2010) and has served as the President of the European Peptide Society (2010-2016).





**INDUSTRIAL PARTNERS** 



# THE BEREGI SCHOLARSHIP

The Servier Research Institute of Medicinal Chemistry (SRIMC) was established in 2007. It is part of the Servier Group, which was launched in 1954 by Dr. Jacques Servier. The devotion of Servier, the biggest independent French pharmaceutical company, to research is well known and is manifested by the fact that it invests 25% of its turnover into research and development.

Since its foundation the SRIMC fostered strong contacts with the Hungarian academic life and Eötvös Loránd University in particular. Several of its collaborators graduated from ELTE and the SRIMC hosts ELTE students on a regular basis. When the decision was made that Servier launches a scholarship program in Hungary, partnering with Eötvös Loránd University seemed a natural choice. The Scholarship is named after László Beregi, a chemist of Hungarian origin who

played a key role in the early life of Servier as a research director.

The four-year Beregi scholarship is awarded to one outstanding student every year and it aims at recognising and nurturing talents. Besides the personal allowance, the scholarship also supports the awardee's research activity. Through this scholarship Servier wants to acknowledge the outstanding quality of the PhD program at ELTE, help the talented young researchers' development, and strengthen the scientific links between SRIMC and ELTE to our mutual benefit of the two partners.

# AGREEMENT

concluded between SERVIER RESEARCH INSTITUTE OF MEDICINAL CHEMISTRY ZRT. (1031 Budapest, Záhony u. 7., represented by: Dr. Andras KOTSCHY, hereinafter referred to as "SRIMC"), INSTITUT DE RECHERCHES SERVIER (company duly registered under French laws - 50 rue Carnot - 92150 Suresnes, France, represented by Mr. Patrick GENISSEL, Director Center of Excellence Research and Biopharmacy, Vice-President Research & Development, hereinafter referred to as "IdRS") and LES LABORATOIRES SERVIER (company duly registered under French laws - 50 rue Carnot - 92150 Suresnes, France, represented by Mr. Bernard MARCHAND, Director of Research & Development Operations, Vice-President Research & Development, hereinafter referred to as "LLS"), (SRIMC, IdRS and LLS are hereinafter jointly referred to as the "Company"); and Eötvös Loránd University (represented by Barna Mezey, rector), FACULTY OF SCIENCE (1117 Budapest, Pázmány Péter sétány 1/A, represented by: Péter Surján, hereinafter referred to as the "Faculty")

and VEGYÉSZ OKTATÁSÉRT ALAPÍTVÁNY (Foundation for Chemical Education, represented by: Tamás Turányi, director, bank account no.: 11400040-22467001-69901010, tax no. 18228823-1-43, hereinafter referred to as the "Foundation").

The Company, the Faculty and the Foundation are hereinafter jointly referred to as "Parties".

# SUBJECT-MATTER

1. The Company hereby sets up a doctoral scholarship called the "Servier Beregi Scholarship" of the Faculty (the "Scholarship Holder") in accordance with the following.

By this Agreement, Company declares that it is interested in the highly qualified, talented young experts related to pharmaceutical research and development trained at the Faculty as its new professional generation.

The Faculty hereby declares that it shall lay special emphasis on the fact that the graduates of the Faculty have adequate knowledge of how to solve both theoretical and practical tasks on their own.

Excerpt from the first page of the Agreement, concluded in 2017, between Servier and ELTE establishing the Servier Beregi Scholarship

(the "Scholarship") for an indefinite period, which it shall annually award to one PhD student



EGIS Headquarters at Keresztúri street at spring time







The Paks Nuclear Power Plant has been dedicated to support science for over three decades.

# In the service of science

Paks Nuclear Power Plant -Eötvös Loránd University -An engagement for science



For the operation of the Paks Nuclear Power Plant, a high-level and confident knowledge of science is a basic requirement. To guarantee the safe, environmentally conscientious, and sustainable operation of its nuclear units, Paks NPP has been engaged in R&D projects with leading Hungarian universities for decades. As an example from the past, the prestigious Hevesy Award was co-founded by Paks NPP, the Hungarian Academy of Sciences and the Somos Foundation to recognize outstanding achievements in the field of nuclear safety. There are a number of professionals at Paks NPP, including those having background in chemical engineering, radiochemistry, environmental engineering, reactor physics, and dosimetry, who must work together to produce nuclear energy. This need for collaboration guarantees our desire to increase cooperation with universities. Paks NPP welcomes the decision of Eötvös Loránd University to name its Chemistry PhD School after György Hevesy.



A painting of Hevesy György by the Hungarian artist Cesar Kunwald

# Annual Report of the ELTE Hevesy György PhD School of Chemistry

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The School is grateful to Mr. Georg de Hevesy for his kind help and for providing material about his father, Hevesy György, used in this Annual Report.

![](_page_31_Picture_4.jpeg)