

SUMMER SCHOOL

29th August-1st September 2022

Monday-Thursday

*To the memory of Professor Imre G. Csizmadia,
the professor of theoretical chemistry*



(30th October 1932 - 13th July 2022)

Background Information

The proper education system of a society always appropriately serving the need of a given phase of the civilization. The first university of our civilization (established in Bologna in 1088 as the 'Nourishing Mother of the Studies') served the Feudalistic phase of our civilization properly, for about 500 years.



During the Industrial phase of our Civilization, around 1590 Galileo Galilei started his gravitational experiments by dropping stones from the leaning tower of Pisa. Around that time the renewal of the University system has started. Close to the ending of the Industrial phase and at the dawn of the Digital phase of our Civilization, the renewal of the University system is realistic again. The present day Classical University system is now coming up to renewal as many people see that. However, in order to define the direction of renewal, first we must define what type of knowledge needed in the future.

Previously, an educated person had to memorize a large volume of scientific information. However, we should not aim to produce Scholars with a huge amount of data in their head because all scientific information will be available in databases. With our educational system, however, we need to produce graduates each of which is a “Creative Genius”.

We should emphasized, that we cannot teach creativity by lecturing about the concept of creativity. Dr. Mihaly Csikszentmihalyi (1934 - 2021) who was Professor of Psychology at the University of Chicago published (1996) a book about that which is entitled):



“Creativity: Flow and the Psychology of Discovery and Invention”

Independently from this, Professor I. G. Csizmadia, at the University of Toronto, in Canada, started his teaching carrier in 1964 at the Department of Chemistry. He found that it was nearly impossible to trigger the interest of 200 students in a classroom to memorize an unbelievable amount of material. He started to invite a few 2nd year undergraduates into his group to do research in the field of quantum molecular computations. By the time, such students received their B.Sc. degree they were able to publish their results in internationally recognized journal. The research associates (Ph.D. and Post-Doc-Fellows), who were also involved in this teaching effort, gained enough experience so that 20 of them received professorial positions, during the past 50 years.

After his retirement, Professor Csizmadia organized 4 week long Summer Schools in Hungary, where students were doing quantum molecular computations on selected chemical project from morning to evening every day. This went on so from 2002 to 2019. However, the project stopped with the arrival of COVID-19. We could not possibly apply this method, in the proposed 4 day-long Summer School. Here we can only show what kind of results could be obtained, during an appropriately long Summer School.

Suggested program

Monday 29th August 2022

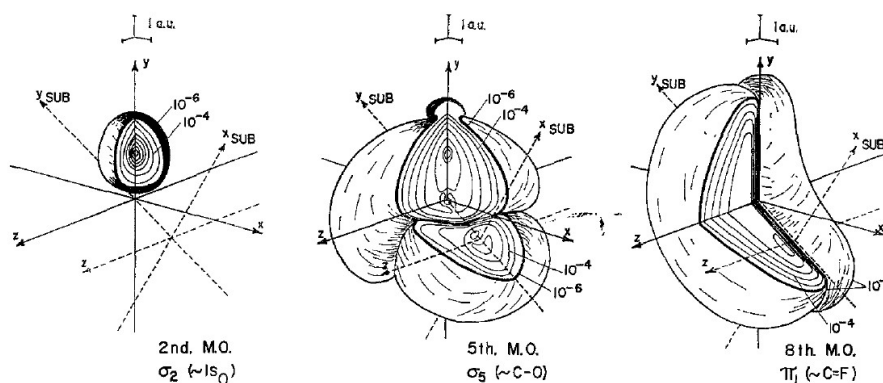
10:00-10:30: Opening Ceremony. Aim of the summer school

Zoltán Mucsi, PhD. (Head of Chemistry, Femtonics Ltd, Hungary)

Ervin Kovács PhD. (Research Fellow at Research Centre for Natural Sciences, Hungary)

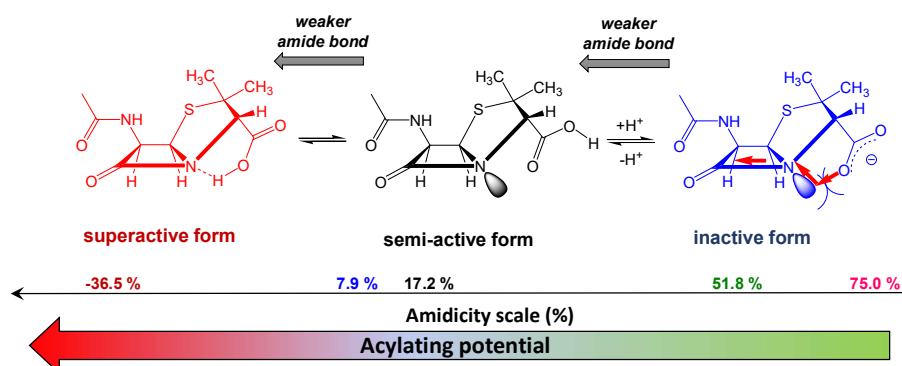
10:30-12:00: Theoretical Chemistry I. Fundamentals of theoretical chemistry

David Setiadi PhD. (Executive Director, Kaplan, USA)



13:00-14:30: Theoretical Chemistry II. The quantification of the aromaticity of heterocycles. The concept of Aromaticity and Amidicity. The mechanism of penicillin.

Zoltán Mucsi, PhD. (Head of Chemistry, Femtonics Ltd, Hungary)



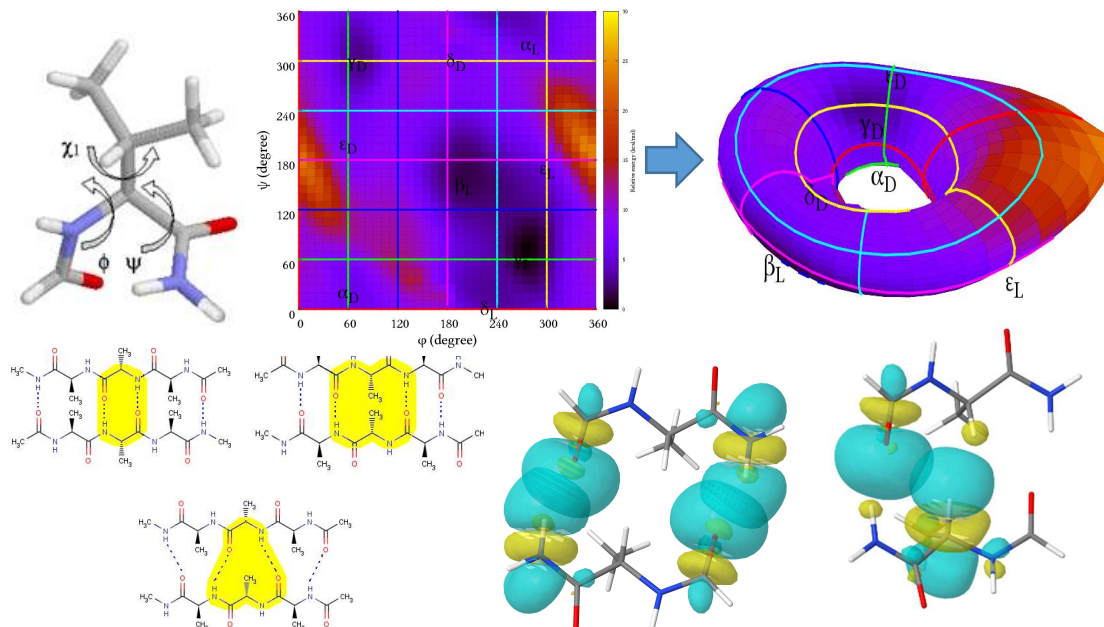
14:30-16:00: Theoretical Chemistry III. Peptide modelling. The role of β -sheet in Alzheimer's disease

Michael Owen, PhD. (Senior Research Fellow, University of Miskolc, Hungary)

Tuesday, 30th August 2022

10:00-11:00: Theoretical Chemistry IV. Advanced theoretical chemistry

John Justine Villar, PhD. (Associate Professor, University of the Philippines Diliman, the Philippines)

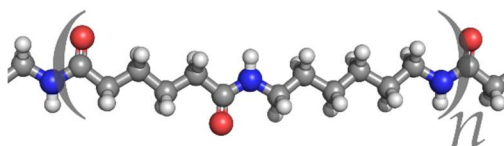


11:00-12:00: Commemoration of Professor Imre Csizmadia

Kun V Tian, PhD. (Researcher, Semmelweis University, Hungary & Sapienza University of Rome, Italy)

13:00-14:00: Advanced materials I. Introduction to polymer chemistry. Mechanism, kinetics, application.

Ákos Szabó, PhD. (Research Fellow at Research Centre for Natural Sciences, Hungary)



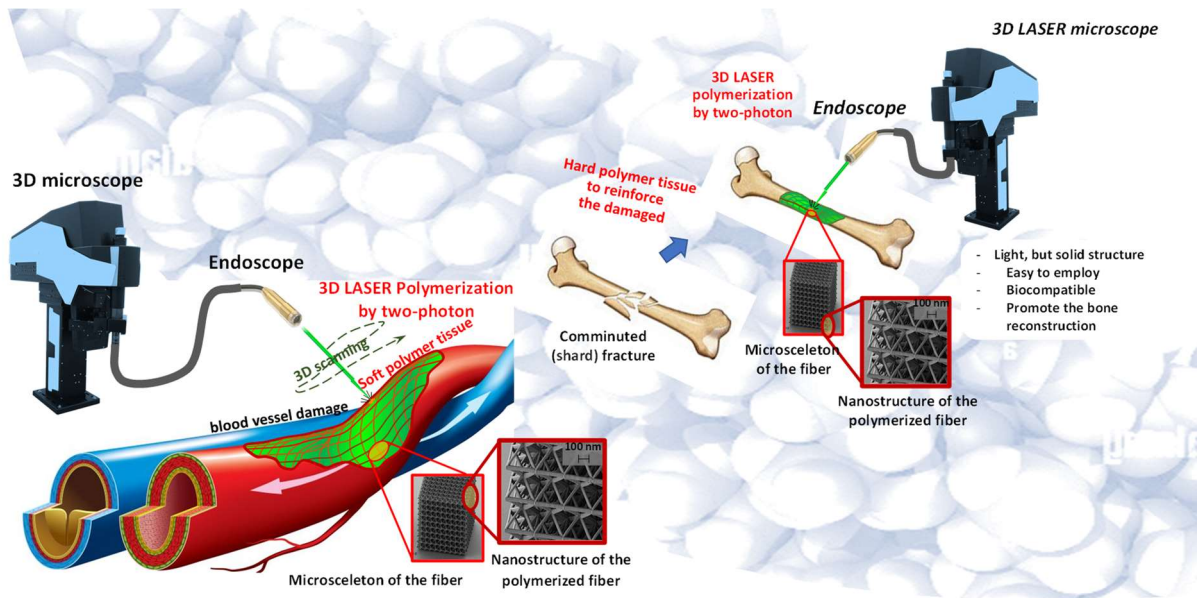
14:00-15:00: Advanced materials II. Flame retardant polymers. Aims, scopes, mechanism.

Ervin Kovács, PhD. (Research Fellow at Research Centre for Natural Sciences, Hungary)

Wednesday 31th August 2022

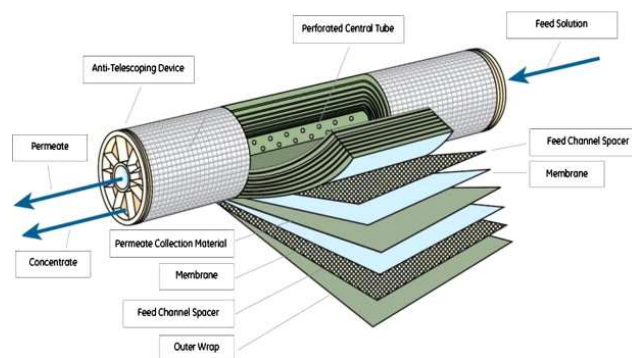
10:00-11:00: Advanced Materials III. Medical applications of silicones and inorganic materials.

Prof. Gregory Chass, PhD. (Director of Graduate Studies and Reader in Computational Chemistry, Queen Mary University of London, United Kingdom)



11:00-12:00: Advanced Materials IV. Membrane technologies

Levente Cseri, PhD. (Postdoctoral Researcher in Chemistry, Femtonics Ltd., Hungary)

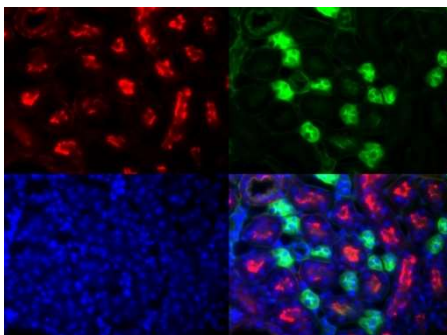


13:00-14:00: Two-photon spectroscopy in neurobiology, tissue analysis using 2P techniques

Balázs Chiovini, PhD. (Expert in Biology, Femtonics Ltd., Hungary)

14:00-15:00: Advanced Microscopic techniques in biological research

Tamás Tompa, PhD. (Expert in Biology, Femtonics Ltd., Hungary)



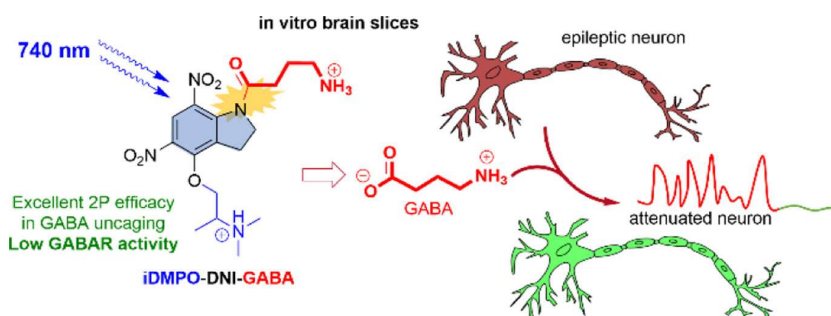
15:15-16:15: Advanced Materials V. Microscopy in Advanced materials science.

Dénes Pálfi, PhD. (Expert in Biology, Femtonics Ltd., Hungary)

Thursday 1st September 2022

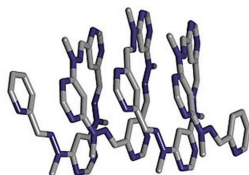
10:00-11:00: (Biomedical) applications of photoremovable protecting groups

Petra Dunkel, PhD. (Assistant Professor, Semmelweis University, Hungary)



11:00-12:00: Chemistry of Foldamers

István Mándity, PhD. (Head of Institute, Semmelweis University, Hungary)



12:00-13:00: Advanced Materials VI. Glass ionomer cements (GIC)

Kun V Tian, PhD. (Researcher, Semmelweis University, Hungary & Sapienza University of Rome, Italy)

13:00-13:30: Closing remarks.

Zoltán Mucsi, PhD. (Head of Chemistry, Femtonics Ltd, Hungary)

Ervin Kovács PhD. (Research Fellow at Research Centre for Natural Sciences, Hungary)