

**ACS Hungary Chapter  
ANNUAL REPORT 2007**

**First Quarter 2007**

- ▼ **Management meeting (25 Jan, 2007)**

The management discussed the main objectives of the Chapter for the year 2007. The main issues:

  - The result of 2006 ACS HC.
  - Services what the Chapter should provide.
  - Recruitment of new members.
  - Short Course (FROST, Budapest, Hungary, 10-12 October, 2007).
  - Discussing the ACS HC website developing contract's terms & conditions.
  
- ▼ **Management Teleconference (06 March, 2007)**

Management's discussion regarding the issues of:

  - Programs in 2007.
    - > *Short Course.* (FROST, Budapest, Hungary, 10-12 October, 2007)  
Determining and spacing out the tasks. Specified the person in charge for each assignment in organizing the first short course on the novel organic chemistry results in Budapest, Hungary by 2007 Fall.
    - > *Meeting in Szeged.* Finalizing the date, place and the program of the meeting. (April 13, 2007, Szeged).
    - > *Centenary.* The role of the Chapter in the Celebration of the 100<sup>th</sup> anniversary of the Hungarian Chemical Society.
  
- ▼ **ACS HC meeting in Szeged (13 April, 2007)** (see [Attachment No.1.](#))

ACS HC held its Annual Meeting in Szeged. Presentations were held in the morning by Dr. Imre Dékány and Dr. Ferenc Fülöp. After lunch an exhibition was opened and organized by Dr. Attila Pavláth, the honorary president of the ACS HC. In the afternoon Dr. Imre Kiricsi and Dr. Tamás Kiss held their presentations.

**Second Quarter 2007**

- ▼ **Conference of Chemical Engineering 2007 (25-27 April, 2007)**

Dr. Ferenc Darvas gave a 40 minutes presentation on the opening day of the conference. Topics: High-pressure, pre-packed microreactors: Break-through in organic chemistry?  
Beside Dr. Ferenc Darvas four other ACS HC member as Dr. Imre Kiricsi, Dr. Jenő Hancsók, Dr. István Hermeecz and Dr. Endre Nagy gave presentation as well.

▼ **MKE Hungarian Chemical Society Centenary Conference, Sopron, Hungary (May 29-June 1, 2007)**

On behalf of ACS HC, ThalesNano, Inc. gave a poster presentation by Dr. Krisztian Niesz

Title: Using novel type of microfluidic based reactor in synthetic chemistry

and Mrs. Ildiko Kovacs

Title: Optimization of selective hydrogenation under continuous process

Oral presentation by Mr. Csaba Csajagi

Title: Liquid gas reactions in X-Cube™ continuous flow system.

▼ **Application for financing of the FROST conference (01. June, 2007)**

ACS HC signed an Application Contract with the International Visegrad Fund (IVF) to partially finance the FROST conference organized by ACS HC. The tender was submitted by 01. June. The requested contribution from the IVF was 4.000 EUR. Unfortunately the tender was refused.

**Third Quarter 2007**

▼ **Management Teleconference (09 July, 2007)**

Management's discussion regarding the issues of:

> *Meeting in Debrecen.* Dr. András Kotschy explained that to choose the date for the meeting in Debrecen could be a greater challenge than to the topics itself. It is hard to find the professional who deals with energy subject and even then there is no new information they could come up with. Dr. Ferenc Darvas called for help of the colleagues of Dr. István Fábian and Dr. Tamás Patonay to organize the meeting.

> *Advertising the benefits of the ACS HC membership.* Dr. Ferenc Darvas urges the advertising of the ACS HC membership to avoid holding conferences only to the already existing members.

> *ACS conference Boston.* Dr. Ferenc Darvas announced that he will participate at the ACS conference in Boston, Dr. András Kotschy told that he would not be able go this time.

> *TC appointment.* Parties agreed to have a follow up Teleconference in two weeks time.

> *FROST conference Budapest.* Dr. András Kotschy and Dr. Ferenc Darvas outlined the present situation of the upcoming short course held in Budapest, Hungary in October.

▼ **234<sup>st</sup> ACS National meeting & Exposition, Boston, MA (19-23 August, 2007)**

Dr. Ferenc Darvas participated at this meeting.

## Fourth Quarter 2007

### ▼ FROST (Frontiers in Organic Chemistry) Short Course, Budapest, Hungary (10-12 October, 2007) (see [Attachment No.2](#))

Invited speakers gave the following lectures:

- Dr. Oliver Kappe (Karl-Franzen University of Graz)  
*Microwave-Assisted Synthesis – From Laboratory Curiosity to Standard Practice in Twenty Years.*
- Dr. György Hajós (Hungarian Academy of Sciences)  
*Some thoughts about the wine for Chemists.*
- Dr. Mark Bradley (University of Edinburgh)  
*HT Physical Organic Chemistry. Monomer Profiling and Hammett Plots.*
- Dr. Ferenc Darvas (UMIT University, Hall/Innsbruck and ThalesNano, Inc.)  
*Using Supercritical Solvents and Ionic Liquids in High-Pressure Packed Microreactors (HPP Microreactors).*
- Dr. Marko Mihovilovic (Vienna University of Technology)  
*Redox Biocatalysis towards Bioactive Compounds.*
- Dr. Paul Watts (University of Hull)  
*Chemical Synthesis in Flow Reactors.*
- Dr. Steven V. Ley (University of Cambridge)  
*Micro and Meso Flow Chemistry: The Way Forward?*

The conference was organized by Dr. Andras Kotschy (Servier Research Institute of Medicinal Chemistry, Budapest) and by Dr. Ferenc Darvas (UMIT University, Hall/Innsbruck and ThalesNano, Inc.).

The FROST short course gave participants an excellent opportunity to learn about modern, novel and important techniques from internationally renowned chemists. This conference gave the attendee a chance to apply these applications in practice as well as sample the highlights of Hungarian history and cuisine.

## Attachment No.1.

The American Chemical Society Hungarian Chapter held a meeting in Szeged on the 13<sup>th</sup> April, 2007.

Program:

10.45-11.00 Opening Ceremony

11.00-11.30 Presentation by Dr. Imre Dékány: Self-assembly structures, ultra thin layers and sensors

11.30-12.00 Presentation by Dr. Ferenc Fülöp: Play Lego with cyclic  $\beta$ -amino acids

12.00-13.15 Lunch

13.30-14.45 Opening ceremony and visit to the Exhibition of „Milestones of Chemistry”. The exhibition and the opening ceremony was organized and given by Dr. Attila Pavláth, the honorary president of The American Chemical Society Hungarian Chapter.

15.00-15.30 Presentation by Dr. Imre Kiricsi: Nanostructure supported, pre- synthesized metal, metal-oxide or metal-sulfide nanoparticles catalytic properties

15.30-16.00 Presentation by Dr. Tamás Kiss: Biospecification of insulin-liked VO (IV) Complexes

16.00-16.15 Close of meeting

## Attachment No.2

### „Frontiers in Organic Chemistry Short Course”

#### FROST

This year on the 10-12<sup>th</sup> October the Frontiers in Organic Synthesis short course by the American Chemical Society Hungarian Chapter was held. At the conference six internationally renowned lecturers gave presentations to more than 50 participants. Three companies exhibited their products to all participants.

During the conference, the participants enjoyed a short course on the novel organic chemistry results achieved through technology innovations such as microwave assisted organic synthesis as well as micro- and mesofluidic reactors. Furthermore, it was presented how reactions rates could be increased significantly using these methods and how physical organic chemistry can be used to predict more reactions.

Dr. Oliver C. Kappe from the Karl-Franzen University in Graz introduced the efficiency of utilizing microwave irradiation for increasing reaction rates and yields in comparison to those reactions which weren't irradiated. The reactions and techniques discussed included C-C coupling reactions, solid-phases and nanoparticle syntheses, and the combination of flow and microwave technology for reaction scale up. Dr. Kappe also described certain examples where there were improvements in yields and reaction time to those reactions undergoing microwave irradiation which could not be explained by thermal effects.

In the evening Dr. Gyorgy Hajos made a presentation about the chemistry of wines including a short introduction to the different Hungarian varieties and flavours. A selection of wines was available, so taste comparisons could be made.

The second day was kicked off by Dr. Mark Bradley from the University of Edinburgh with a presentation on High-Throughput Monomer Profiling and Hammett Plots. Despite the increasing number of techniques in the perspective of fast preparation of chemical entities, screening steps often represent the bottleneck of high throughput techniques. Analytical processes are often time consuming and require a set of instruments since no universal characterisation tool is currently available. Amongst those tools, Electrospray Ionisation Mass Spectrometry (ESI/MS) has the advantage of being fast and compatible with automatisisation, but it has two main drawbacks of not sensitive compounds and not being quantitative. The presentation focused on the addressing of these loopholes, by using a specific MS Tag that allows systematic detection and quantitative studies on mixtures of products by single ESI/MS analysis. Examples were given where up to 20 monomers were profiled from a one pot reaction.

Dr. Ferenc Darvas made a presentation from ThalesNano Inc., Hungary highlighting the applications of ionic liquids and supercritical fluids in flow reactors to perform organic synthesis such as aromatic ring hydrogenation, Heck and Suzuki coupling reactions and the synthesis of nanoparticles. The advantage of ionic liquids is that they can be used at extremely high temperatures and that they can dissolve a wide range of chemical compounds which make them suitable for flow synthesis. ThalesNano Inc. has already developed a series of

flow reactors which can incorporate supercritical carbon dioxide and ionic liquids. The reactors also allow chemists to use temperature and pressure up to 200°C (392°F) and 150 bars (2176 psi) respectively in the laboratory safely and easily.

After lunch Dr. Marko Mihovilovic, a Professor from Vienna University of Technology, Austria gave an excellent overview of enzyme catalyzed reactions. The main advantages of using biocatalysts are that they are environmentally benign and the reactions often result in high enantioselectivity in high efficiency. Many examples were given including industrial lipase mediated hydrolysis and esterification, redox biotransformations, and addition reactions. Chemoenzymatic sequence via domino cyclization and biocatalyst evaluation of BMVOs were just two topics of his own work that were highlighted during the presentation.

Three companies exhibited at the FROST conference. Anton Paar Hungary Ltd., and Novolab, on behalf of the Biotage Inc., presented microwaves and ThalesNano Inc. exhibited their series of Cube flow reactors.

On the second day, in the afternoon, participants visited the ThalesNano Open Flow Laboratory for reactor demonstrations. Among the instruments shown were the ThalesNano Cube flow reactors which included the H-Cube® continuous-flow hydrogenation reactor, its scale-up version, the H-Cube Midi™, and the X-Cube™. The Anton Paar Synthos 3000 type microwave instrument was also demonstrated.

The last day of the conference featured two presentations. The first was by Dr. Paul Watts from the University of Hull, UK who gave an overview of his work carried out on microreactors made from glass chips. A series of reactions were presented including solid phases peptides synthesis, selective syntheses, and experiments using isotope labeling and crown ethers synthesis using a supported immobilized phase. These reactions resulted in high yield and reproducibility and were often higher in purity than those carried out using batch techniques.

Dr. Steven Ley from the University of Cambridge gave the last presentation at the conference on Micro and Meso Flow Chemistry: the Way Forward? Dr. Ley gave a detailed overview of how though using a variety of different flow reactors his group was able to perform natural product synthesis, peptide synthesis, and give solutions to the scale up of hazardous reactions. The flow synthesis of the natural product Oxomaritidine and the preparation of the neolignan natural product Grossamide by a continuous flow process were highlights of a thoroughly engaging talk.

Overall the Frontier in Organic Chemistry short course gave participants an excellent opportunity to learn about modern, novel and important techniques from internationally renowned chemists. Furthermore this conference gave the attendee a chance to apply these applications in practice as well as sample the highlights of Hungarian history and cuisine.

The conference was organized by Dr. Andras Kotschy (Servier Research Institute of Medicinal Chemistry, Budapest) and by Dr. Ferenc Darvas (UMIT University, Hall/Innsbruck, Austria and ThalesNano, Inc., Budapest).