Program of XV. Workshop of Physical Chemists and Electrochemists

26th and 27th of May, 2015

under the auspices
of rector of Masaryk University Assoc. Prof. PhDr. Mikuláš Bek, Ph.D.
and
of dean of Faculty of Science MU Assoc. Prof. RNDr. Jaromír Leichmann, Dr.
Dear participants,  
We would like to kindly invite you to the conference **XV. Workshop of Physical Chemists and Electrochemists** which will be held 26th and 27th of May at Masaryk University in Brno. According to this program you can see a schedule of lectures and all other events. We believe that you will enjoy the opportunity to report and discuss your scientific and educational results. The both conference days are opened with the series of plenary lectures, followed by the invited lectures. The afternoon time in the both days is devoted to competitive lectures in the “Young scientists’ Session”. All participants are invited to the Poster Session followed by the gala dinner on Tuesday afternoon. On Wednesday, 27th of May, the conference will be concluded with the announcement of winners of Poster Session and the “Young scientists’ Session”.  
We wish you a pleasant experience of the whole conference.  

Libuše Trnková
Tuesday 26<sup>th</sup> of May, 2015

8:00 – 8:55 REGISTRATION
9:00 – 9:20 OPENING CEREMONY
  Assoc. Prof. RNDr. Libuše Trnková, CSc.

PLENARY LECTURES
  Chairman – Assoc. Prof. RNDr. Libuše Trnková, CSc.

9:20 – 10:00 Viktor Brabec
TRANSITION METAL-BASED CONSTRUCTS AS ANTICANCER DRUG CANDIDATES. RECENT ADVANCES AND INSIGHTS

10:00 – 10:40 Jan Hrbáč
NOVEL APPROACHES TO ELECTRODE MODIFICATION BY NANOSTRUCTURED METALS

10:40 – 11:00 COFFEE BREAK, Presentation of companies

LECTURES
  Chairman – Assoc. Prof. RNDr. Jan Hrbáč, Ph.D.

11:20 – 11:40 Jan Vacek
SWITCHING OF ELECTROCHEMICAL PROPERTIES OF PROTEINS UPON GLYCATION

11:40 – 12:00 Petr Skládal
ATOMIC FORCE MICROSCOPY FOR CHARACTERIZATION OF BIOMOLECULES, AFFINITY COMPLEXES AND CELLS

12:00 – 12:20 Peter Barath
GET TO KNOW METROHM – company presentation

12:20 – 12:30 Traditional photo
12:30 – 13:30 LUNCH

13:30 – 13:50 Karel Lacina
SIMPLE ELECTROCHEMICAL TRANSDUCING SYSTEM WITH OPTICAL READOUT FOR POINT-OF-CARE APPLICATIONS

13:50– 14:10 Ondřej Jašek
PLASMA TREATMENT OF CARBON NANOMATERIALS SCREEN-PRINTED WORKING ELECTRODES OF ELECTROCHEMICAL SENSORS

14:15 – 14:40 COFFEE BREAK, Presentation of companies
YOUNG SCIENTISTS’ SESSION
Chairman – RNDr. Tomáš Slanina

14:40 – 15:00 Zuzana Korenčiaková
DEVELOPMENT OF FLUORESCENT SUBSTRATES OF HALOALKANE DEHALOGENASES FOR MECHANISTIC ENZYMEOLOGY

15:00 – 15:20 Barbora Lásková
ELECTROCHEMICAL Li INSERTION INTO TiO₂ POLYMORPHISM: STUDY OF MECHANISM AND STRUCTURAL CHANGES

15:20 – 15:40 COFFEE BREAK, Presentation of companies

15:40 – 16:00 Michaela Štěpánková
VOLTAMMETRIC BEHAVIOUR OF HERBICIDE LINURON ON BORON-DOPED DIAMOND ELECTRODE

16:00 – 16:20 Veronika Kočanová
ELECTROCHEMICAL CORROSION OF STEEL AS A SOURCE OF Fe²⁺ CATALYST OF FENTON REACTION

16:20 – 16:40 COFFEE BREAK, Presentation of companies

POSTER SESSION
Chairman – Assoc. Prof. RNDr. Jan Hrbáč, Ph.D.

16:40 – 18:00 Presentations of posters THE AUTHORS OF POSTERS REGISTERED IN COMPETITION WILL PREPARE A SHORT (3 MINUTES) PRESENTATION AT THEIR POSTERS. THE AUTHORS OF THE OTHER POSTERS WILL PRESENT THEIR POSTERS INDIVIDUALLY.

18:00 Gala dinner
Wednesday 27th of May, 2015

PLENARY LECTURES
Chairman – Assoc. Prof. RNDr. Jan Hrbáč, Ph.D.
9:00 – 9:40 Vlastimil Vyskočil
NOVEL ELECTROCHEMICAL DNA BIOSENSORS AS USEFUL TOOLS FOR INVESTIGATION AND DETECTION OF DNA DAMAGE

9:40 – 10:20 Tomáš Slanina
SPECTROELECTROCHEMISTRY AND ELECTROFLUORIMETRY OF BIOLOGICALLY RELEVANT FLUORESCENT DYES

10:20 – 10:40 COFFEE BREAK, Presentation of companies

LECTURES
Chairman – RNDr. Vlastimil Vyskočil, Ph. D.
11:00 – 11:20 David Hynek
SCANNING ELECTROCHEMICAL MICROSCOPY

11:20 – 11:40 Vimal Sharma
A BIOSENSING APPLICATION OF PENCIL GRAPHITE ELECTRODE MODIFIED BY COPPER NANO Particles FOR ADENINE DETECTION

11:40 – 12:00 Shubhangi Kaushik
FLUORESCENCE POLARIZATION ASSAY TO QUANTIFY BINDING OF SELECTED FLUORESCENT LIGANDS TO HALOALKANE DEHALOGENASES WITH MODIFIED TUNNELS

12:00 – 12:20 Lucie Krajcarová
UV-VIS SPECTROPHOTOMETRY OF MICROLITER SAMPLE VOLUME BY MEANS OF NANODROP INSTRUMENTS (THERMO SCIENTIFIC) – company presentation

12:20 – 13:30 LUNCH

YOUNG SCIENTISTS’ SESSION
Chairman – Mgr. Zdeněk Farka

13:35 – 13:55 Tomáš Juřík
DETECTION OF GLUCOSE USING GEL-TEMPLATED GOLD NANO STRUCTURED ELECTRODES

13:55 – 14:15 Adéla Kotzianová
ANALYSIS OF BIODEGRADABLE NANOFIBROUS LAYERS
14:15 – 14:35 COFFEE BREAK, Presentation of companies

14:35 – 14:55 Matúš Durec
TRANSFER OF MONOVALENT IONS IN QUADRUPLE DNA SYSTEMS

14:55 – 15:15 Yevgen Yurenko
DESIGNING NUCLEOBASES FOR NUCLEIC ACID QUADRUPLEXES

15:30 ANNOUNCEMENT OF THE COMPETITION WINNERS
Assoc. Prof. RNDr. Libuše Trnková, CSc., Assoc. Prof. RNDr. Jan Hrbáč, Ph.D.

ANNOUNCEMENT OF THE COMPETITION RESULTS FOR THE BEST POSTERS
ANNOUNCEMENT OF THE COMPETITION RESULTS OF THE YOUNG SCIENTISTS’ SESSION
The sponsor of the book prizes: Czech Chemical Society, subdivision Brno.
List of posters

1. **THE COMPARISON OF CHEMICAL AND MAGNETIC CHANNELRHODOPSIN-2 TRANSFECTION EFFICIENCY**  
Larisa BAIAZITOVA, Ondřej SVOBODA, Vratislav ČMIEL, Ivo PROVAZNÍK, Zdenka FOHLEROVÁ, Jaromír HUBÁLEK

2. **CONTRIBUTIONS OF CYTOCHROMES P450 TO DETOXIFICATION OF A HUMAN CARCINOGEN ARISTOLOCHIC ACID I IN A HUMAN AND RAT LIVERS**  
Marie STIBOROVÁ, František BÁRTA, Kateřina LEVOVÁ, Petr HODEK, Eva FREI, Heinz M. SCHMEISER, Volker M. ALRT

3. **OPTICAL AND SPECTROELECTROCHEMICAL STUDY OF INTERACTION BETWEEN MESOTETRAKIS (4-SULFONATOPHENYL)PORPHYRIN DERIVATIVES AND CYKLODEXTRINS IN AQUEOUS SOLUTION**  
Juraj DIAN, Jindřich JINDŘICH, Jiří MOSINGER

4. **VACUOLAR-ATPASE-MEDIATED INTRACELLULAR SEQUESTRATION OF ELLIPTICINE CONTRIBUTES TO DRUG RESISTANCE IN NEUROBLASTOMA CELLS**  
Jan HRABĚTA, Tomáš GROH, Mohamed Ashraf KHALIL, Jitka POLJAKOVÁ, Vojtěch ADAM, rene KIZEK, Jiří UHLÍK, Helena DOKTOROVÁ, Tereza ČERNÁ, Eva FREI, Marie STIBOROVÁ, Tomáš ECKSCHLAGER

5. **ROLE OF ZINC IONS IN ADVANCED PROSTATE CANCER MODEL**  
Jaromír GUMULEC, Markéta SZTALMACHOVÁ, Jan BALVAN, Michal MASAŘÍK

6. **THE INFLUENCE OF VERTEX POTENTIAL AND MULTIPLE SCAN VOLTAMMETRY ON THE FORMATION OF 8-OXOGUANINE**  
Libor GURECKÝ, Iveta PILAŘOVÁ, Libuše TRNKOVÁ

7. **VOLTMETRIC DETECTION OF DNA DAMAGE CAUSED BY 2-AMINOFLUORENE AND ITS METABOLITE 2-ACETYLMINOFLUORENE**  
Andrea HÁJKOVÁ, Jiří BAREK, Vlastimil VYSKOČIL

8. **MULTI-WALLED CARBON NANOTUBES AND THEIR DOUBLE-STEP FUNCTIONALIZATION WITH ETOPOSIDE AND ANTISENSE PHOSPHOROTHIOATE OLIGODEOXYNUCLEOTIDES**  
Zbynek HEGER, Amitava MOULICK, Hoai VIET NGUYEN, Monika KREMPLOVA, Pavel KOPEL, David HYNEK, Ondrej ZITKA, Vojtech ADAM, Rene KIZEK

9. **EVALUATION OF ANTI-PAII IMPUNOGLOBULIN EFFICACY BY MONITORING OF LUMINESCENT PSEUDOMONAS AERUGINOSA**  
Petr HODEK, Lucie VAŠKOVÁ, Libuše NOSKOVÁ, Barbora BLAHOVÁ, Michaela WIMMEROVÁ, Božena KUBÍČKOVÁ, Marie STIBOROVÁ

10. **BENZO[A]PYRENE IS OXIDIZED BY RAT HEPATIC MICROSOMES BOTH IN THE PRESENCE OF NADPH AND NADH**  
Radek INDRA, Michaela MOSEROVÁ, Miroslav ŠULC, Volker M. ALRT, Marie STIBOROVÁ

11. **FABRICATION OF NANOPOROUS ALUMINA MEMBRANES FOR ELECTROCHEMICAL SENSOR**  
Hana KYNCOLOVA, Jiří SMILEK, Jan PRÁŠEK, Petr SEDLÁČEK, Martina KLUČÁKOVÁ, Jaromír HUBÁLEK

12. **ON THE ANODIZING BEHAVIOUR OF ALUMINIUM IN CITRIC ACID ELECTROLYTES**  
Tomáš LEDNICKÝ, Alexander MOZALEV
| 13. | CORE/SHELL QUANTUM DOTS AS FLUORESCENT LABELS OF BIOMOLECULES | Ana MIHAILOVIC, Jana PEKÁRKOVÁ, Jaromír HUBÁLEK |
| 14. | A CENTRAL ROLE FOR PHYTOCHELATIN IN PLANT AND ANIMALS: A REVIEW | Olga KRYŠTOFOVÁ, Miguel Ángel MERLOS RODRIGO, Ondrej ZITKA, Vojtěch ADAM, René KIZEK |
| 15. | STUDY OF CHARACTERIZATION MAMMALIAN METALLOTHIONEINS BY MALDI-TOF/TOF AND ELECTROCHEMICAL METHOD | Miguel Ángel MERLOS RODRIGO, Jorge MOLINA LOPEZ, Ondrej ZÍTKA, René KIZEK |
| 16. | BENZO[α]PYRENE, ELLIPTICINE AND 1-PHENYLAZO-2-NAPHTOL INDUCE EXPRESSION OF CYTOCHROME B5 IN RATS | Marie STIBOROVÁ, Michaela MOSEROVÁ, Iveta MRÍZOVÁ, Helena DRAČÍNSKÁ, Věra ČERNÁ, Eva FREI, Volker M. ALRT |
| 17. | LEAD PENCIL GRAPHITE AS ELECTRODE MATERIAL: STRUCTURAL AND ELECTROCHEMICAL PROPERTIES | Rudolf NAVRÁTLIL, Vladimír HALOÚŽKA, Jan HRBÁČ, Libuše TRNKOVÁ |
| 18. | CHEAP AND QUICK PRODUCTION OF MICRO AMALGAM ELECTRODES FOR DETERMINATION OF SOIL CONTAMINATED WITH HEAVY METALS (CD (II) AND Pb(II)) | Lukas NEJDL, Magdalena HABOVA, Jiri KUDR, Branislav RUTTKAY-NEDECKY, Jindrich KYNICKY, Lubica POSPISILOVA, Vojtech ADAM and Rene KIZEK |
| 19. | SYNTHESIS OF CONJUGATED AROMATIC SYSTEMS AND THEIR PROPERTIES | Michaela BRHELOVÁ, Hugo SEMRÁD, Markéta MUNZAROVÁ, Iveta PILAŘOVÁ, Libuše TRNKOVÁ, Milan POTÁČEK |
| 20. | DIAMOND COATED QUARTZ CRYSTAL MICROBALANCE SENSOR AS PLATFORM FOR DETECTION OF PROTEIN ADSORPTION | Václav PROCHÁZKA, Pavel KULHA, Tibor IŽÁK, Egor UKRAINSTEV, Marian VARGA, Alexander KROMKA |
| 21. | ELECTROCHEMICAL FABRICATION OF THIN NANOPOROUS TITANIA SURFACES | Kateřina PŘIKRYLOVÁ, Jana DRBOHLAVOVÁ |
| 22. | VOLTAMMETRY OF GUANOSINE AND GUANOSINE MONOPHOSPHATE ON A PENCIL GRAPHITE ELECTRODE | Mehdi RAVANDEH, Libuše TRNKOVÁ |
| 23. | MODIFICATION OF CQDS MONITORED BY BRDICKA REACTION | Lukas RICHTERA, Vedran MILOSAVLJEVIC, Pavel KOPEL, David HYNEK and Rene KIZEK |
| 24. | PRION PROTEIN AND ITS INTERACTIONS WITH METALS AND METALLOTHIONEIN 3 | Branislav RUTTKAY-NEDECKY, Eliska SEDLACKOVA, Dagmar CHUDOBOVA, Kristyna CIHALOVA, Vojtech ADAM and Rene KIZEK |
| 25. | MICROFLUIDIC CHIP WITH AMPEROMETRIC DETECTION FOR MONOSACHARIDES DETERMINATION | Jan SLAVÍK, Jaromír HUBÁLEK |
| 26. | VOLTAMMETRIC DETERMINATION OF BICARBONATE | Filip SMRČKA, Jakub VANĚK, Přemysl LUBAL |
27. NADPH- AND NADH- DEPENDENT OXIDATION OF AND DNA ADDUCT FORMATION BY BENZO[A]PYRENE CATALYZED WITH HUMAN CYTOCHROME P450 1A1
Marie STIBOROVÁ, Radek INDRA, Michaela MOSEROVÁ, Petr HODEK, Miroslav ŠULC, Heinz H. SCHMEISER, Eva FREI, Volker M. ALRT

28. MODIFICATION OF CARBON ELECTRODE WITH GRAPHENE OXIDE SHEETS
Jana VLACHOVA, Lukas RICHTERA, David HYNEK and Rene KIZEK