

Stabilitätspakt für Südosteuropa Gefördert durch Deutschland Stability Pact for South Eastern Europe Sponsored by Germany

Workshop "From Molecules to Functionalized Materials" Module "Optical and Electronic devices" 1-5 September 2016 Ohrid, Republic of Macedonia

INTERNATIONAL MASTER AND POSTGRADUATE PROGRAMME IN MATERIALS SCIENCE AND CATALYSIS

MatCatNet

Workshop

"From Molecules to Functionalized Materials" Scientific Module "Optical and Electronic Devices"

PROGRAMME AND ABSTRACT BOOK

1-5-September 2016. Ohrid, Macedonia

P R O G R A M M E

MatCatNet Workshop "From Molecules to Functionalised Materials" and Scientific module "Optical and Electronic Devices" <u>1-5 September 2016 Ohrid, Macedonia</u>

Thursday, 1 September 2016

09:00-09:50	Registration
09:50-10:00	Prof. Dr. Evamarie Hey-Hawkins and Prof. Dr. Slobotka Aleksovska <i>Welcoming address</i>

Scientific module "Optical and Electronic Devices" -Lectures-

10:00-11:00	Prof. D	r. Murie	el Hiss	ler (R	ennes, F	rance)	
DEVICES	π -CONJUGATED POLYMERS FOR (OPTO)ELECTRONIC		IIC				
11:00-11:30	Coffee b	reak					
11:30-12:30	Prof. D	r. Murie	el Hiss	ler (R	ennes, F	rance)	
DEVICES	π-CONJU	GATED	POLY	MERS	FOR (OPTO)E	LECTRONIC
12:30-14:00	Lunch						
14:00-14:45	Assoc. Roman PRECURS	Prof. ia) SORS FOR	Dr. R OPTIC	Luiza AL MAT	Gaina Cerials A	n (Clu	j-Napoca, CES
14:45-15:30 Macedonia)	Prof.	Dr.	Slobo	otka	Alekso	vska	(Skopje,
	ORGANIO MATERIA	C-INORGA ALS FOR (ANIC PE Solar	CROVSKI CELLS	ITES AS PF	KOSPECT	IVE
15:30-16:00	Coffee b	reak					

16:00-16:45	Prof. Dr. Metodija Najdoski (Skopje, Macedonia)
	ELECTROCHROMISM AND ELECTROCHROMIC DEVICES

<u>Friday, 2 September 2016</u>

09:00-09:45	Prof. Dr. Fetah Podvorica (Prishtina, Kosovo)
	GRAFTING OF ORGANIC FILMS FOR MOLECULAR ELECTRONIC JUNCTIONS
09:45-10:30	Prof. Dr. Rubin Gulaboski (Štip, Macedonia)
	ELECTROCHEMICAL DEVICES - PRINCIPLES AND APPLICATION
10:30-11:00	Coffee break
11:00-11:45	Ass. Prof. Dr. Marjan Randjelović (Niš, Serbia)
	COLOR(ED) CENTERS AND RELATED DEFECTS IN CRYSTALLINE MATERIALS FOR OPTO-ELECTRONIC (FUNCTIONALIZED) DEVICES
11:45-12:30	Dr. Radomir Ljupkovic (Niš, Serbia)
	HRTEM AND FESEM IN CHARACTERIZATION OF SELECTED MODERN MATERIALS – PART 1
12:30-14:00	Lunch
14:00-14:45	Dr. Radomir Ljupkovic (Niš, Serbia)
	HRTEM AND FESEM IN CHARACTERIZATION OF SELECTED MODERN MATERIALS – PART 2
Minisym	posium "Advanced Methods in Chemistry"
14:45-15:15	Ass. Prof. Dr. Biljana Balabanova (Štip, Macedonia)
	OPTICAL EMISSION SPECTROSCOPY: A METHOD FOR CORRELATING EMISSION INTENSITIES TO "REACTIVE PARTICLE DENSITY"

15:15-15:45Assoc. Prof. Dr. Violeta Ivanova Petropulos (Štip,
Macedonia

BASIC PRINCIPLES OF HIGH PERFORMANCE LIQUID CHROMATOGRAPHY

15:45-16:15 *Coffee break*

16:30- Sightseeing of Ohrid

<u>Saturday, 3 September 2016</u>

MatCatNet Workshop "From Molecules to Functionalised Materials"

-Oral presentations-

Session 1 (Chair: Leon Stojanov)

- **09:00-09:40** Muriel Hissler – invited speaker (Rennes, France) P-CONTAINING POLYCYCLIC AROMATIC HYDROCARBONS: COORDINATION CHEMISTRY AND OPTO-ELECTRONIC APPLICATIONS
- **09:40-10:00** *Coffee break*
- 10:00-10:15 Éva Andrea Molnár

(Faculty of Chemistry and Chemical Engineering, Babes-Bolyai University, Cluj-Napoca, Romania)

ARYL- AND $\beta\mbox{-}FORMYLATION$ OF NEW PHENOTHIAZINYL-PORPHYRINS

10:15-10:30 Arijanit A. Reka (Faculty of Natural Science and Mathematics, University in Tetovo, Macedonia)

> PHASE TRANSOFRMATIONS OF SILICON DIOXIDE IN DIATOMACEOUS EARTH AT TEMPERATURE RANGE 1000 – 1200 °C

- 10:30-10:45 John Popp (Faculty of Chemistry and Mineralogy, Leipzig University, Germany) DENDRITIC FERROCENYL PHOSPHINES FOR REDOX-SWITCHABLE CATALYSIS
- 10:45-11:00Dijana Atanasova
(Faculty of Medical Sciences, University Goce Delcev– Štip,
Macedonia)OPTIMIZATION AND VERIFICATION OF THE METHOD FOR
DETERMINATION OF ANTIOXIDANT ENZYME CATALASE IN VITRO

Session 2 (Chair: Marija Sterjova)

11:00-11:15 Jeton Halili

(University of Prishtina, Department of Chemistry, Prishtina, Kosovo)

<u>GC-FID OPTIMIZATION AND VALIDATION FOR SIMULTANEOUS</u> <u>DETERMINATION</u> OF HEROIN IN REAL SAMPLES

- 11:15-11:30 Noémi Deak (Faculty of Chemistry and Chemical Engineering, Babes-Bolyai University, Cluj-Napoca, Romania) NEW SULFUR-BASED PINCER TYPE LIGANDS: FROM DESIGN TO APPLICATIONS
- **11:30-11:45** *Coffee break*

11:45-12:00 Kaltrina Jusufi

(University of Prishtina, Department of Chemistry, Prishtina, Kosovo)

DETERMINATION OF HEAVY METALS IN CABBAGE SAMPLES FROM THE AREA SURROUNDING KOSOVO'S POWER PLANTS

12:00-12:15 Antonio Buzharevski (Faculty of Chemistry and Mineralogy, Leipzig University, Germany) CARBORANYL ANALOGUES OF NONSTEROIDAL ANTI-INFLAMMATORY DRUGS (NSAIDs)

Session 3 (Chair: Patricia Miclea)

12:15-12:30 Miranda Misini

(University of Prishtina, Department of Chemistry, Prishtina, Kosovo)

DETERMINATION OF ANTIOXIDANTS WITH ELECTROCHEMICAL BIOSENSORS BASED ON BORON DOPED DIAMOND ELECTRODES AND CARBON PASTE ELECTRODES

12:30-12:45 Viktorija Maksimova

(Faculty of Medical Sciences, University Goce Delcev– Štip, Macedonia)

COMPARISON OF OPTICAL AND ELECTROCHEMICAL METHODS FOR DETERMINATION OF THE ANTIOXIDANT EFFECT OF SOME PLANT METABOLITES

12:45-13:00 Hamdije Memeti

(Faculty of Natural Science and Mathematics, University in Tetovo, Macedonia)

DETERMINATION OF ADSORPTION CHARACTERISTICS OF NATURAL INORGANIC SORBENTS FOR REMOVAL OF Cr(VI) IONS FROM WATER RESOURCES

13:00-13:15 Aleksandra Krsti<u>ć</u>

(Faculty of Science and Mathematics, University of Niš, Niš, Serbia)

CYCLIC VOLTAMMETRY USING MODIFIED CARBONPASTE ELECTRODES FOR ELECTRO-CATALYTIC ACTIVITY STUDY OF DOPED CARBON MICROSPHERES: POTENTIAL APPPLICATION FOR ELECTRO-CATALYTIC SENSING

13:15-14:30	Lunch		
14:30	Boat trip to St. Naum		

Sunday, 4 September 2016

-Oral presentations-

Session 4 (Chair: Arijanid Reka)

09:00-09:15 **Ionut-Tudor Moraru** (Faculty of Chemistry and Chemical Engineering, Babes-Bolyai University, Cluj-Napoca, Romania) UNDERSTANDING THE STRUCTURE OF SILOXANIC, GERMOXANIC AND STANNOXANIC SPECIES 09:15-09:30 **Leon Stojanov** (Faculty of Natural Sciences and Mathematics, Unversity Ss Cyril and Methodius, Skopje, Macedonia) PREPARATION OF SILVER NANOPARTICLES USING ASCORBIC ACID AND GLUTHATHIONE AS REDUCTIVE REDOX AGENTS 09:30-09:45 **Taulant Demelezi** (University of Prishtina, Department of Chemistry, Prishtina, Kosovo) THE EVALUATION OF THE CARBON DIOXIDE SUPERCRITICAL EXTRACTION PERFORMANCE OF VITAMIN C FROM LEMON FRUIT BY THE USE OF ELECTROCHEMICAL METHODS 09:45-10:00 Sasho Stojkovikj (Faculty of Natural Sciences and Mathematics, Unversity Ss Cyril and Methodius, Skopje, Macedonia) DESIGN OF AMPEROMETRIC SENSORS FOR H₂O₂ BASED ON K_{0.27}MnO₂·x H₂O THIN FILMS 10:00-10:15 Patricia Miclea (Faculty of Chemistry and Chemical Engineering, Babes-Bolyai University, Cluj-Napoca, Romania) ALTERNATIVE PATHS FOR CONTROLLING THE OXIDATION STATE OF CLASS 2 HEMOGLOBIN FROM ARABIDOPSIS THALIANA

Session 5 (Chair: John Popp)

10:15-10:30 Ana Koceva

(Faculty of Natural Sciences and Mathematics, Unversity Ss Cyril and Methodius, Skopje, Macedonia)

POSSIBILITIES FOR CHEMICAL MODIFICATION AND ANALYSIS WITH INFRARED AND RAMAN SPECTROSCOPY OF GROUND SILICATE GLASS

10:30-10:45 Angela Trajkovska (Faculty of Natural Sciences and Mathematics, Unversity Ss Cyril and Methodius, Skopje, Macedonia)

IR AND RAMAN SPECTROSCOPIC ANALYSIS OF CHEMICALY MODIFIED FLAT SILICATE GLASS

10:45-11:00 Stefan Jovanov

(Faculty of Natural Sciences and Mathematics, Unversity Ss Cyril and Methodius, Skopje, Macedonia)

TEMPERATURE-DEPENDENT PROPERTIES OF LIQUID WATER FROM A COMBINED STATISTICAL MECHANICS – NETWORK SCIENCE PERSPECTIVE

11:00-11:15 Daniela Gjorgjevikj

(Faculty of Natural Sciences and Mathematics, Unversity Ss Cyril and Methodius, Skopje, Macedonia)

EVALUATION OF THE ELECTROCHEMICAL ACTIVITY OF ASCORBIC ACID AND THE SYNERGY WITH GLUTATHIONE IN DIFFERENT PH ENVIRONMENT

11:15-11:45 *Coffee break*

- Poster flash presentations -

Session 6 (Chair: Aleksandra Krstić)

11:45-11:50Marija Sterjova
(Faculty of Medical Sciences, University Goce Delcev–Štip,
Macedonia)

POSSIBILITIES FOR FORMULATION OF TRASTUZUMAB - RADIOIMMUNOGONJUGATES

11:50-11:55 Elena Drakalska (Faculty of Medical Sciences, University Goce Delcev– Štip, Macedonia)

CURCUMIN LOADED HYBRID pH-SENSITIVE LIPOSOMES-PREPARATION AND CHARACTERIZATION

11:55-12:00 Alexandra-Krisztina Simon (Faculty of Chemistry and Chemical Engineering, Babes-Bolyai University, Cluj-Napoca, Romania) SPIN-LABELED BLOOD SUBSTITUTE CANDIDATES: IN VITRO AND

SPIN-LABELED BLOOD SUBSTITUTE CANDIDATES: IN VITRO AND IN VIVO EVALUATION

12:00-12:05 Marija Atanasova (Faculty of Medical Sciences, University Goce Delcev– Štip, Macedonia) VOLATILE COMPOSITION, ANTIOXIDANT AND ANTIMICROBIAL

VOLATILE COMPOSITION, ANTIOXIDANT AND ANTIMICROBIAL ACTIVITY OF ESSENTIAL OIL FROM *MENTHA ARVENSIS* L. ORGANICALLY PLANTED FROM MACEDONIA

12:05-12:10Bojan Bogatinovski
(Faculty of Natural Sciences and Mathematics, Unversity Ss Cyril
and Methodius, Skopje, Macedonia)DEHALOGENATION OF HEXACHLOROCYCLOHEXANES USING
ZINC DUST

12:10–14:00 Lunch

Session 7 (Chair: Kaltrina Jusufi)

14:00-14:05 Dragana Trajkovikj

(Faculty of Natural Sciences and Mathematics, Unversity Ss Cyril and Methodius, Skopje, Macedonia)

SIMULTANEOUS DETERMINATION OF ACTIVE COMPONENTS IN VETERINARY DRUGS USING UV SPECTROSCOPY AND CHEMOMETRICS

14:05-14:10 Kire Stojanovski

(Faculty of Natural Sciences and Mathematics, Unversity Ss Cyril and Methodius, Skopje, Macedonia)

 $SYNTHESIS \ AND \ CRYSTALSTRUCTURE \ DETERMINATION \ OF \\ SmCo_{0.5}Cr_{0.5}O_3 \ AND \ Sm_{0.8}Ca_{0.2}Co_{0.5}Cr_{0.5}O_{3-\delta} \ PEROVSKITES$

14:10-14:15 Elena Cvetkovska

(Faculty of Natural Sciences and Mathematics, Unversity Ss Cyril and Methodius, Skopje, Macedonia)

ESTIMATION OF MEASUREMENT UNCERTAINTY FOR ENROFLOXACIN DETERMINATION IN VETERINARY MEDICINAL PRODUCTS BY TWO SPECTROPHOTOMETRIC METHODS

14:15-14:20 Besart Shatri

(University of Prishtina, Department of Chemistry, Prishtina, Kosovo)

SYNTHESIS, CHARACTERIZATION AND THE USE OF SUBSTITUTED ARYLDIAZONIUM SALTS FOR THE MODIFICATION OF THE ACTIVATED CARBON POWDER

14:20-14:25 Elisaveta Nikoloska

(Faculty of Natural Sciences and Mathematics, Unversity Ss Cyril and Methodius, Skopje, Macedonia)

INFLUENCE OF SILVER SUBSTITUTION ON ELECTROCATALYTIC

Session 8 (Chair: Noemi Deak)

14:25-14:30 Alexandra Bogdan (Faculty of Chemistry and Chemical Engineering, Babes-Bolyai University, Cluj-Napoca, Romania) 1,3-DIOXANE DERIVATIVES AS INTERMEDIATES FOR CHEMICALLY AND PHOTOCHEMICALLY ACTIVATED MOLECULAR DEVICES 14:30-14:35 Fjolla Hashani

(University of Prishtina, Department of Chemistry, Prishtina, Kosovo)

THE ROLE OF SURFACTANTS (TRITON X-100 AND SODIUM DODECYLBENZENESULFONATE) ON THE ELECTROCHEMICAL DETERMINATION OF ASCORBIC ACID

14:35-14:40 Sara Gligoroska

(Faculty of Natural Sciences and Mathematics, Unversity Ss Cyril and Methodius, Skopje, Macedonia)

SYNTHESIS AND IDENTIFICATION OF SOME GUANIDINIUM ORGANIC-INORGANIC PEROVSKITES

14:40-14:45 Ilirijana Osmani

(University of Prishtina, Department of Chemistry, Prishtina, Kosovo)

THE ELECTROCHEMICAL MONITORING OF "EX SITU" EXTRACTED VITAMIN C

14:45-14:50 Gjani Hulaj

(University of Prishtina, Department of Chemistry, Prishtina, Kosovo)

THE USE OF THE GRAFTED ACTIVATED CARBON POWDERS FOR THE ADSORPTION OF THE LINDANE PESTICIDE FROM MODEL SYSTEMS

- **14:50–16:30** *Poster session / Coffee break*
- **20:00** Gala dinner

<u>Monday, 5 September 2016</u>

AN OVERVIEW OF THE MatCatNet PROJECT

09:30-10:00	Prof. Dr. Evamarie Hey-Hawkins (project leader, Germany) An overview of the project: achievements and perspectives
10:00-10:30	Prof. Dr. Luminita Silaghi-Dumitrescu An Overview of the project – Romanian perspective
10:30-10:45	Prof. Dr. Slobotka Aleksovska Personal experiences
10:45-11:15	Coffee break
11:00-11:30	Award ceremony
11:30-12:30	Roundtable discussion- Moderator: Prof. Evamarie Hey-Hawkins (project leader)
12:30-14:30	Lunch
14:30-15:30	Project coordinators meeting
15:30-16:00	Closing remarks
17:00	Departure



Stabilitätspakt für Südosteuropa Gefördert durch Deutschland Stability Pact for South Eastern Europe Sponsored by Germany

Workshop "From Molecules to Functionalized Materials" Module "Optical and Electronic Devices" 1-5 September 2016, Ohrid, Republic of Macedonia

POSSIBILITIES FOR FORMULATION OF TRASTUZUMAB -RADIOIMMUNOGONJUGATES

Marija Sterjova¹, Predrag Dzodic², Paulina Efremova¹, Emilija Janevik-Ivanovska¹ marija.sterjova@ugd.edu.mk

¹ University 'Goce Delcev', Faculty of Medical Sciences, str. "Krste Misirkov" No. 10-A, 2000 Stip, R. Macedonia

² University in Nis, Medical Faculty, str. "Zoran Dindic" No. 81, 18000 Nis, Serbia

Trastuzumab (Herceptin[®]) is a commercially approved humanized IgG1 monoclonal antibody for treatment of HER2 positive breast cancer. Monoclonal antibodies are selective and specific anticancer therapy which are used for conjugation with another dugs, toxins and radioisotopes. In recent years, with the development of radiopharmacy, are synthesized many stable conjugates with various bifunctional chelators (DOTA, DTPA, HYNIC, 1B4M-DTPA, TCMC), for further labeling with radioisotopes.

In order to increase the selectivity of the drugs and toxins and the good clinical results of trastuzumab encouraged many scientists to try to formulate stable conjugates. All radioimmunoconjugates of trastuzumab are in phase of preclinical and clinical examination and allows significant improvement in the general conditions of the patients. For imaging and identification of HER2 positive lesions are developed immunoconjugates labeled with γ and β^+ emitters (^{99m}Tc-HYNIC-trastuzumab,¹¹¹In-DOTA-trastuzumab, ⁶⁴Ga-DOTA-trastuzumab, ⁶⁸Ga-DOTA-trastuzumab). *In vitro* and *in vivo* investigations shows that conjugates labeled with pure β and α emitters are new promising drugs in treatment of HER2 positive cancers which allows selective uptake of radioimmunoconjugates by the tumor cells and minimal localizaton in healthy organs. Till now,¹⁷⁷Lu-DOTA-trastuzumab, ⁹⁰Y-DTPA-trastuzumab, ²¹²Pb-TCMC-trastuzumab, ²²⁷Th-DOTA-*p*-benzyl-trastuzumab and ²²⁵Ac-trastuzumab, given good *in vivo* results and selective internalization in HER2 positive breast, prostate and ovarian cancer cells.

The goal of this examination to formulate stable freeze dried kit trastuzumab-conjugate with bifunctional chelators (DOTA, DTPA, HYNIC and 1B4M-DTPA) and *in vitro* chemical characterization and identification. The most stable conjugate will be used for obtaining radioimmunogonjugates with ⁶⁸Ga and ¹⁷⁷Lu and their preclinical in vitro and in vivo biodistribution using animal models.

Key words: Trastuzumab, breast cancer, immunoconjugates, radioispotopes, bifunctional chelators.

MatCatNet - International Master and Postgraduate Programme in Material Science and Catalysis

