SYMPOSIUMS

The French-Polish Symposium on Chemistry

23–25 mai 2022
Centre Scientifique de l'Académie Polonaise des Sciences à Paris

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On 23-25 May 2022, the French-Polish Symposium on Chemistry co-organised by the Polish Academy of Sciences – Scientific Center in Paris and the Faculty of Chemistry of the Adam Mickiewicz University in Poznań took place at the Polish Academy of Sciences – Scientific Center in Paris. The event was inaugurated by Her Magnificence Rector of the Adam Mickiewicz University, Prof. Bogumiła Kaniewska, and the Director of the Polish Academy of Sciences – Scientific Center in Paris, Dr Magdalena Sajdak. Then, plenary lectures by eminent chemists – Prof. Régis Gauvin of the Institut de Recherche de Chimie Paris, and Prof. Miłosz Pawlicki of the Jagiellonian University, were given.

During the Symposium, the latest discoveries of French and Polish research teams in the field of supramolecular chemistry, whose representatives honoured the event with their presence, were presented and extensively discussed. Supramolecular chemistry has been successfully used to create new materials that form the basis of nanochemistry, as well as new catalysts and molecular switches extremely important in information gathering and processing. In turn, interactions of small ligands with bio-molecules are of great importance in the design of drugs effective in anti-cancer and gene therapies.

In addition to experienced scientists, the event was well attended by PhD students and undergraduates, for whom this was an extremely important – because first – opportunity to present their achievements in the form of a presentation to a wider audience.

Book of abstracts

There and back again: Acceptorless dehydrogenative coupling of alcohols and related catalysis

Régis GAUVIN

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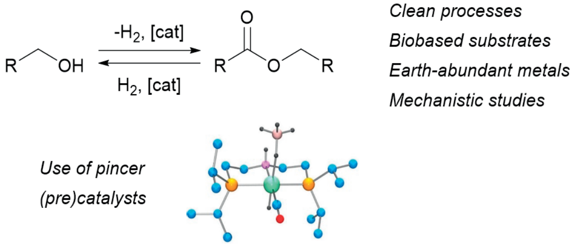
The development of highly efficient organometallic systems for acceptorless alcohol dehydrogenative chemistry has initiated a whole domain of catalysis [1]. Indeed, use of bifunctional systems opened new avenues in the field [2]. Major advances in transition metal-mediated synthesis were thus achieved, resulting in cleaner processes compared to classical approaches (milder conditions, environmentally benign starting materials and by-products, etc.).

In this contribution, we will discuss alcohol conversion into esters as well as the reverse transformation, *i.e.*, ester hydrogenation, using pincer ligand systems. Mechanistic investigations and catalyst design (using Earth-abundant metal species, for instance) will also be presented [3].



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A few words about yourself...

As everyone, I unsurprisingly enjoy travels and good food. On the extra side, I have a long-lasting interest in historical studies with a focus on intercultural relationships and interplays (Subrahmanyan, Eldem, Boucheron...).

An old concept in a new light – on local and global delocalisations in strongly conjugated systems

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Modulation of p-electrons in the frames of unsaturated hydrocarbons ready for introducing substantial modifications to observed delocalization, including switching from diatropic to paratropic currents has been diagnosed as a pivotal aspect of p-conjugated derivatives opening a wide scope of potential for applications. A separate aspect of planned changes in conjugation, observable in precisely designed unsaturated hydrocarbons is switching between local and global effects of p-conjugation, stabilizing solely global diatropic or paratropic current but also showing two local and opposite dia- and paratropic currents. The extension of conjugation has been realized with an application of several factors (e.g. deprotonation, redox) but also by introducing the rigidifying factor that can be assigned to filling gaps in a *nanographene-like* system by electron accepting or electron donating elements.

The strategy for formation of hybrid structures linking in one skeleton acene(s) or heteroacenes modulated by a presence of a specific defect shows a potential for switching between diatropic and paratropic currents after redox activation.[1] It results in, depending on the complexity of final molecule, observation of local effects of conjugation efficiently influencing properties of each subunit.[2] A specific construction opens a possibility for observation of the reactivity characteristic for isolated unsaturated units[3] in addition creating an opportunity for switching on the global diatropic currents.[4] All those effects will be presented and discussed focusing on the derivatives stabilizing different delocalization paths within precisely designed structural motifs introducing triangular defect(s) open for a post-synthetic modifications either by entrapping of a central ion or redox switching, showing the synthetic approach followed by the spectroscopic behaviour extended by XRD analysis and theoretical support.

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A few words about yourself...

In my work I am balancing on the interface of several fields focusing my attention on formation of organic structures with controllable and in some degree also predictable behavior. Along with my collaborators we broad our understanding of strongly coupled and p-extended chromophores of different origin. My adventure in this field has started in Oxford, UK where I was working in Harry Anderson lab as a Marie-Curie Fellow. In a spare hour I like to do some noise with my guitars and play music with my daughter.

Light-induced magnetism in molybdenum and tungsten complexes

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High spin molecules and photomagnetic compounds attract more and more attention due to their potential interest in memory devices or optical switches.[1] In this context, octacyanomolybdate or octacyanotungstate precursors might be viewed as interesting building blocks not only for the drastic increase of their magnetization induced by visible light irradiation, but also for the design and the synthesis of multicomponent architectures.

In this presentation, we focus on three themes that emerge from our research:

(i) a spin transition centered on the molybdenum that has been evidenced on a MoZn2 complex (leading to High Spin Mo(IV), $S = 1$),[2]

(ii) a family of photo switchable polynuclear molybdenum-copper complexes, from MoCux, ($x = 1, 2, 4, 6$) to compounds of higher nuclearity such as Mo3Cu4 and Mo6Cu14, that behave as photo-switchable high spin molecules due to a photo-induced electron transfer,[3]

(iii) a photo-induced M-CN bond breakage in octacyanomolybdate or octa-cyanotungstate compounds leading to spin triplet trapping.[4]

Most of the compounds might be used as starting material for the design and the synthesis of polymetallic supramolecular architectures in order to combine multi-properties.[5]

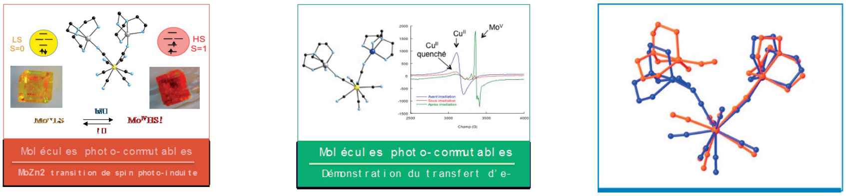

Figure 1. In order to explain the photomagnetic properties, three different mechanisms have been evidenced in Mo and W complexes: spin transition, electron transfer and bond breakage

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A few words about yourself...

Valérie Marvaud is Research Director at the CNRS in IPCM laboratory of Sorbonne University in Paris. She performed her PhD in Inorganic Chemistry at the University Pierre and Marie Curie (Paris 6) in 1991 under the Supervision of Prof. Jean-Pierre Launay (CEMES, Toulouse), working on molecular electronics.

Her scientific career involved postdoctoral stays at Cambridge University with Prof. Jeremy Sanders working on supramolecular chemistry. In 1993 she became CNRS researcher at the University of Bordeaux where she staid three years in the group of Prof. Didier Astruc working on dendrimers and organometallic chemistry. Then she joined Professor Michel Verdaguer in Paris and she is now an internationally recognized scientist in the field of Molecular Magnetism (high spin molecules, photo-magnetism, supramolecular inorganic chemistry and magnetic dendrimers). In her free time, she likes playing music, going to concerts and theatres, reading all sort of books, visiting painting exhibitions and doing her best to take care of her family and others.

Supramolecular assemblies – from molecular components to functional nanostructures

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Supramolecular chemistry investigates chemicals systems and large architectures build from simple molecular components connected *via* weak, non-covalent and reversible interactions. The same holds for molecular chemistry when the molecular entity contains covalent bonds that may form and break reversibility, so as to allow a continuous modification in constitution by reorganization and exchange of building blocks. These features define a Dynamic Combinatorial Chemistry (DCC) on both the molecular and supramolecular levels.[1] The field of DCC is currently undergoing a revival, largely on account of our increased understanding of supramolecular phenomena and the subsequent development of self-assembly processes. The results obtained so far show the enormous potential of complex and functional chemical systems generated by implementation of supramolecular and DCC approach, however the full understanding of controlled synthesis of multicomponent molecular and supramolecular architectures (2D and 3D), with predicted physicochemical parameters was not yet achieved.

Taking into account the big potential of supramolecular and dynamic covalent chemistries in the creation of functional architectures[2] we decided to investigate the formation of complex chemical systems by means of dynamic/reversible covalent and non-covalent bonds.[3] The purpose of our studies is the development of new complex supramolecular and molecular dynamic systems of different topologies and functions.[4-7] The influence of the employed dynamic bonds on the structural, physicochemical and functional properties of the synthesized architectures is of our main interest.

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A few words about yourself...

I received my PhD from the University of Strasbourg (France, 2009) under the supervision of Prof. Jean-Marie Lehn. In September 2009 I joined the group of Prof. Jeremy K. M. Sanders at the University of Cambridge as a Ministry of Defence research associate. In July 2013 I moved back to the Adam Mickiewicz University in Poznań to set up my independent research group. Currently, I am a full professor at the Faculty of Chemistry and Vice Director of the Center for Advanced Technologies. I am happy husband and father of two kids: Wiktor and Hania. My hobbies include cooking, all kind of sports activities and spending time with my friends. I love spicy Asian food and Alsacian white wines.

Application of the switchsense technique for the study of small molecules affinity to DNA

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The discovery and introduction of the switchSense technique in the chemical laboratory has drawn well-deserved interest owing to its wide range of applications [1-3]. The essence of this technique is based on its suitability for the study of the interactions between an analyte and a ligand in real-time (in a buffer flow). Its simplicity, on the other hand, is based on the use of a signaling system that provides information about the ongoing interactions based on the changes in the fluorescence intensity.

This technique can be extremely advantageous in the study of small molecules particularly pharmaceuticals. The design of compounds with biological activity, as well as the determination of their molecular targets and modes of interactions, are crucial in the search for new drugs and the fight against drug resistance.

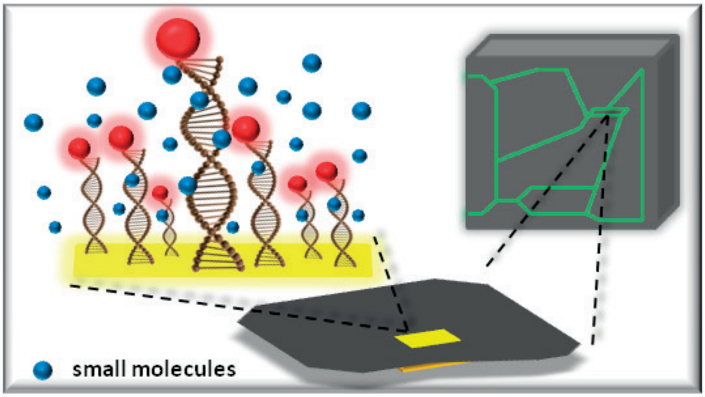

Figure 1. Scheme of the measurement system and modified chip surface

Therefore, the proposal of the switchSense technique application for the study of the binding kinetics of small model molecules such as ethidium bromide and sulfathiazole with DNA has been presented. Research has been carried out in the static and dynamic modes, at three different temperatures (15, 25, and 37°C). These new physicochemical insights and applications obtained from the switchSense technique allow for the design of an effective strategy for molecular interactions assessments of small but pharmaceutically important molecules with DNA.

Acknowledgments: This work was supported by the National Science Centre (NCN) under Grant No. UMO-2019/33/B/ST4/00031

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A few words about yourself...

Prof. Mariusz Makowski is the head of the Department of Bioinorganic Chemistry at the Faculty of Chemistry of the University of Gdańsk. Scientific interests: computational chemistry, nonlinear analysis, physics-based potentials, acid-base equilibria, hydrogen bond, d-block metal complexes with pyrazine and its derivatives, and sulfonamides. PI and investigator in several scientific projects. The author and co-author of more than 100 papers and book chapters. From 2004 to 2012 post-doc fellow and visiting scientist at Cornell University in the Prof. Harold A. Scheraga group. I play basketball, bike, swim, and hike in my free time.

Synthesis and physicochemical characterization of amino and diazepinoporphyrazines with potential biological activity

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For the last 20 years, macrocyclization reactions of dicarbonitrile derivatives have led to a plethora of various porphyrazines. Porphyrazines have been evaluated for their electronic properties, for the tendency for aggregation and photodegradation, singlet oxygen generation efficiency and in vitro photodynamic activity [1].

Herein, an overview of the synthetic, physicochemical and biological activity of the family of macrocyclic systems will be described. Four new compounds from the porphyrazine family were obtained, including three diazepinoporphyraziness (**Fig. 1a, 1b** and **1c**) and one aminopyrazine (**Fig. 1d**) [2-5]. Porphyrazines **1a**, **1b** and **1c** were subjected to physicochemical and biological tests. Moreover, the absorption and emission properties, the tendency to form aggregates, photochemical stability, as well as the quantum yield of singlet oxygen generation were determined for all macrocycles. *In vitro* photodynamic activity of porphyrazines **1a**, **1b** and **1c** was determined against the LNCaP tumor cell line. The studies included incubation of tumor cells with porphyrazines both in their free form and after their incorporation into liposomes. Next, the tumor cells

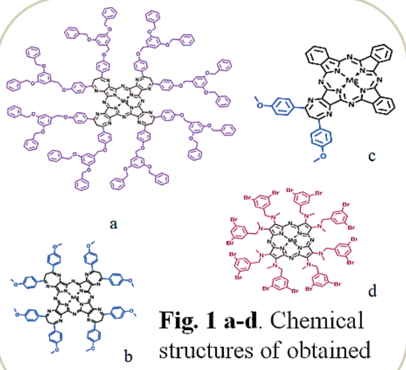

Fig. 1 a-d. Chemical structures of obtained porphyrazines containing studied molecules were treated with the red light using LEDs, allowing to determine photocytotoxicity. The highest photocytotoxicity on tumor cell line was found for tribenzoporphyrazine **1c** due to structural features.

These systems represent a very promising molecular building blocks for the generation of unique diazaborole-based polymers. These will function ascathodematerials in aluminium batteries, which is currently being pursued in our laboratory.

Financial support from the National Science Centre, Poland (SONATA grant UMO-2020/39/D/ST4/01182) and IDUB-UAM "Scientific conferences - support for the participation of scientists and doctoral students in prestigious scientific conferences" is gratefully acknowledged.

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A few words about yourself...

Doctor of medical science in discipline of pharmacy. After PhD defense at the Medical University in Poznan associated with drug discovery and drug development industry. Recently working as PostDoc in the project: *Multifunctional character of copper(II) macrocyclic complexes in atom transfer radical polymerization and molecular nanomagnetism* at Adam Mickiewicz University in Poznan. Privately traveller lover, happy mum and kitchen enthusiast.

Schiff base cobalt and iron complexes as a new family of catalysts for hydrosilylation reaction

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The hydrosilylation reaction is one of the most important catalytic reactions used on an industrial scale in the synthesis and modification of silicon compounds [1]. The catalysts commonly used in this process are platinum, rhodium and ruthenium compounds and complexes. The high price of noble metals and the inability to reuse them in technological processes lead to the search for alternative, cheaper and similarly effective catalysts based on other metal complexes. A chance to solve this problem is created by catalytic systems based on more abundant first-row transition elements (*3d* electron metals) of the periodic table, such as iron, cobalt and nickel, and even compounds of main group elements.

In the communication we present the results of research on the development of new, effective and selective catalytic systems of hydrosilylation reactions of functionalized alkenes [2] and alkynes [3] based on cobalt(II) and iron(III) complexes with Schiff base-type 3*N*-donor ligands and alkali metal trialkylborohydrides. An important aspect of the research is the optimization of procedures aimed at increasing the efficiency and selectivity of the tested systems, as well as an attempt to explain the mechanism of catalytic transformations. Particular emphasis will be placed on the influence of the ligand structure on the catalytic activity and selectivity of transition metal catalysts.

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A few words about yourself...

Piotr Pawluć – professor at the Faculty of Chemistry, Adam Mickiewicz University in Poznań. Head of the doctoral school in exact sciences. Postdoctoral fellow with Professor Andre Mortreux at the Lille University (2008-2009). My research interests involve developing catalytic methodologies for the preparation of organometallic building blocks and their application to organic synthesis. Interests and hobby: modern literature, Mediterranean cuisine, Italian wines.

How to design an efficient photocatalyst?
On factors influencing activity of photocatalysts

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We reveal the role of the TiO_2 phase composition in various types of photocatalytic reactions, controlled either by reduction or oxidation counterparts. We hypothesize that the choice of the optimal phase composition of TiO_2 should take into account both the nature of photocatalytic reaction and intrinsic physicochemical properties of the composite photocatalyst. To verify this hypothesis, we report the phase-tuneable syntheses of TiO_2 nanoparticles under mild temperatures (up to 200°C), which resulted in two series (A and B) of materials characterized by different anatase-to-rutile ratios, but otherwise similar morphologies. The synthesized materials were examined in water oxidation, hydrogen peroxide reduction, photocurrent generation and methanol-assisted water reduction [1]. The optimal phase composition depends on the reaction type – high contents of rutile or anatase should be considered for H_2O_2 reduction and water oxidation, respectively, while water reduction requires moderate contents of both polymorphs. The A series appeared more active in oxidation-controlled reactions, while the B series facilitated reduction-controlled processes. The DOS analysis confirmed, that rutile is a significantly better reducer, whereas anatase is a better oxidant [2-4]. Presented data show that a synergistic effect observed usually for anatase/rutile composites can result from both, intrinsic and extrinsic factors. The intrinsic factors are responsible for the improved photocatalytic activity of the material related to its physicochemical properties, e.g., efficiency of charge separation, lifetime of photogenerated charges,

absorption properties, redox characteristics, porosity, specific surface area, etc. The extrinsic factors are strongly related to the redox reactions to be performed at the photocatalyst surface, both oxidation and reduction. Therefore, the design of the optimal photocatalyst must take into account both, intrinsic and extrinsic factors.

During the presentation some new ideas on designing new active photocatalysts will be presented and briefly discussed.

Acknowledgements: The work was supported by the Foundation for Polish Science (FNP) within the TEAM project (POIR.04.04.00-00-3D74/16) and by the National Science Centre (NCN; 2018/30/Q/ST5/00776).

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A few words about yourself...

Wojciech Macyk – graduated from the Jagiellonian University in Kraków (Poland), completed his PhD degree at the University of Erlangen-Nürnberg (Germany). Currently the dean of the Faculty of Chemistry, Jagiellonian University. In 2014 and 2015 he was a visiting professor at the Catalysis Research Center, Hokkaido University, Sapporo, and at School of Computing, Engineering and Mathematics, Western Sydney University. His research interests include mechanisms of photocatalytic processes, redox properties of photocatalysts, photocatalytic detoxification and disinfection, photocatalytic CO2 fixation, photoelectrochemistry and spectroelectrochemistry of semiconductors. More info: www.photocatalysis.eu

Dynamic self-assembly and self-sorting equilibria of the hydrogen-bonded supramolecular capsules

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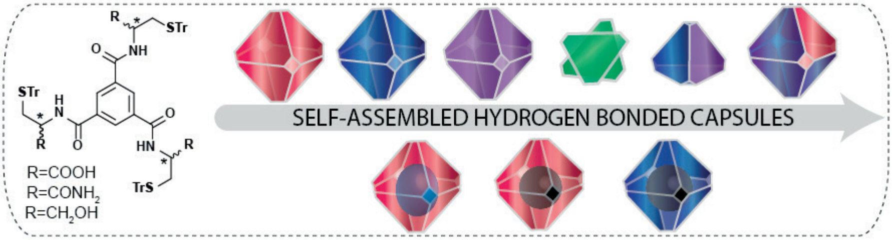
Non-covalent interactions are vital for any living organism. Taking inspiration from nature, the supramolecular chemists explored multiple pathways to form highly sophisticated hydrogen-bonded assemblies and tune their properties and functionality. One of the most extensively investigated types of those assemblies are the supramolecular capsules.

A few years ago, our group presented the first hydrogen-bonded octameric capsule[1] based on the benzene-1,3,5-tricarboxylic acid (BTA) core- a new supramolecular motif for the generation of the purely non-covalent capsules. The spontaneously formed assembly is held together by 48 cooperative hydrogen bonds, distributed evenly around eight pores located on the assembly's vertices.



Debating the importance of the particular interactions within the array, we designed two new building blocks, shearing the similar molecular symmetry and chemical composition, with the main exception being the hydrogen bonding sites.

The presentation will show that those subtle changes may affect not only the self-assembly outcome but also the stability, properties and functionality of the supramolecules obtained. The newly synthesized components have also shown surprising behavior in chiral and structural self-sorting experiments, giving access to new heterochiral tetrameric products or socially and narcissistically sorted libraries of capsular assemblies, depending on the mixture composition.

This work was supported by National Science Centre (Grant: SONATA BIS 2018/30/E/ST5/00032).

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A few words about yourself...

Natural born chemist. When not in the lab, I like watching movies, cooking, and good wine. I spend most of my holidays in the mountains, which always allows me to slow down and look at the world around me from a broader perspective. Several years spent in sports climbing have taught me that there are no problems that can't be overcome- some are just more difficult. I love challenges, hate boredom and predictability.

Overcrowded alkenes in Solids: from unidirectional rotation to functional materials

Wojciech DANOWSKI

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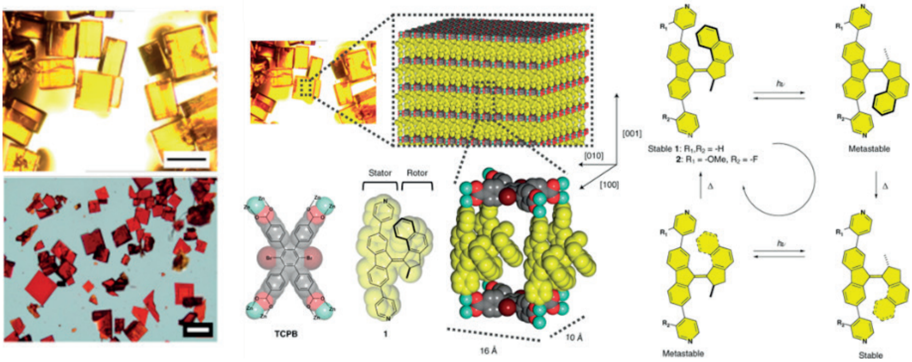
Molecular machines, switches, and motors enable control over nanoscale molecular motion with unprecedented precision in artificial systems. Among these molecules, overcrowded alkenes offer vide range of functions from bistable chiroptical switching to chirality-dictated unidirectional rotation. Immobilization and precise organization of these molecules into nanostructured porous materials is considered a prerequisite for achieving cooperativity, synchronization, amplification and translation of their collective motion. In addition, incorporation of these molecules into porous solids holds promise for the fabrication of responsive materials, the properties of which can be controlled on-demand with high spatial temporal precision. However, the possible applications of these materials are limited due to the restrictions imposed by the solid-state environment on the incorporated photoswitches, which render the photoisomerization inefficient. [1].



In this contribution, several examples of fully operational porous materials build on light-responsive overcrowded will be presented. A simple strategy to achieve spatial arrangement of the 2nd generation molecular motors in alkenes using metal-organic frameworks (MOFs) platform will be described [2]. Next The visible-light-driven rotation of an overcrowded alkene-based molecular motor strut in a metal–organic framework (MOF) operating as light harvesting platform will be described [3]. Lastly, bulk quantitative photoisomerization and modulation of gas uptake in highly porous aromatic will be presented [4].

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A few words about yourself...

I love reading books especially fantasy and fiction genres. When I have some spare time, I turn a few pages of a new book. The best way to spend holidays is sailing on Masuria's lakes or hiking in the mountains.

My favorite dishes must be Stamppot and Cordon Bleu, perfect comfort food and easy to make!

Structures, Dynamics and application of Cyclodextrin-Polyrotaxanes

Bernold HASENKNOPF

Sorbonne Université, Institut de Chimie Moléculaire (CNRS UMR 8232), Paris, France.
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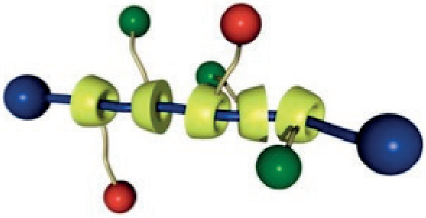
This presentation will focus on oligo- and polyrotaxanes containing native and functionalized cyclodextrins. With the ultimate goal of preparing modular bimodal imaging agents, we studied in detail the rotaxanation reaction of a-cyclodextrin with cationic or anionic axles.

We can switch reversibly from threading to dethreading by adjusting the pH, and we can fine-tune the kinetics by appropriate functionalization of the cyclodextrin [1].

Positive or negative cooperativity is observed for the accumulation of more than one cyclodextrin on the axle. Our detailed structural analysis shows the conformational changes that occur in the self-assembled cavities, and provides an explanation for the binding behavior [2].



Representation of a polyrotaxane with functionalized cyclodextrins

These results are the stepping stones for the further development of more complex systems of polyrotaxanes with functionalized cyclodextrins such as, for example, our bimodal polyrotaxanes for MRI and fluorescence imaging [3].

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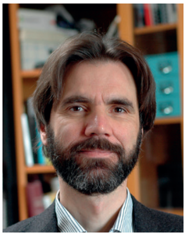
A few words about Berni...



Passionate about supramolecular chemistry and fascinated by self-assembly, the way to create complex architectures with simple molecules;
Dedicated to teaching and engaged in the pedagogical transformation for the education of future chemists and critical citizens;
Committed to Europe and involved in university networks for the advancement of science and society.
Delighted to share a good meal with friends and family

Molecular information ratchet based on cyclodextrin [2] rotaxane

Enxu LIU, Sawsen CHERRABEN, Guillaume VIVES, Bernold HASENKNOPF, Matthieu SOLLOGOUB

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Molecular machines[1], defined as an assembly of a discrete number of molecular components designed to perform mechanical-like movements as a consequence of external stimuli[2], have drawn attention of the scientific community. Although various examples of small molecular machines have been described[3], the regulation of the unidirectional movement remains a challenge.

Information ratchets[4] are a general class of mechanism in which an energy barrier is regulated on a potential energy surface in order to directionally drive the Brownian particle distribution away from equilibrium. Therefore, creating molecular information ratchet is crucial to reach unidirectional movement of molecular machines. Cyclodextrins[5] could be good candidates for this system because of their asymmetric cone-like shape and chiral cavity.

Herein, we describe a permethylated cyclodextrin [2] rotaxane which can perform ratcheting motion. The rotaxane is composed of three equivalent stations separated by two secondary amines as reactive sites that can react with Fmoc derivatives. During the Fmoc-protection a kinetic bias resulting in a non-statistical distribution between the three possible mechano-isomers was observed. This bias can be rationalized by the asymmetry of the CD that favors the reaction when the amine is facing the secondary rim rather than the primary rim. Different factors controlling the ratcheting mechanism, such as solvent, reaction temperature and reactivity of the Fmoc derivatives were investigated and will be presented.

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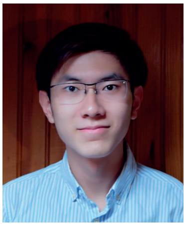
A few words about yourself...



Hi everyone, my name is Enxu Liu. I am a Phd student at the last year of my thesis. I am excited and grateful to share the story of my Phd project to you at the French Polish symposium on chemistry.

When I am not doing chemistry, I usually read books on philosophy and I also like to do sports such as basketball, swimming and table tennis with friends. My favorite dish is dumpling made from my mother.

That's the brief introduction about myself. I am looking forward to see you at the French Polish symposium on chemistry.

Improving the understanding of molecular nanomagnetism and atom transfer radical polymerization through the rational design of copper(II) coordination compounds

Adam GORCZYŃSKI

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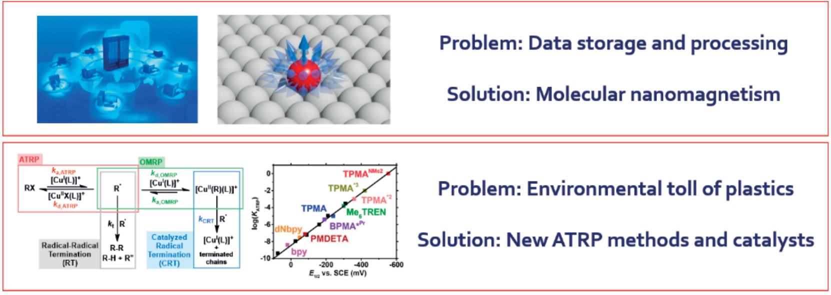
The rational design and modification of molecular architectures is of prime importance for predictive generation of advanced functional materials. These in turn should find applications towards solving some of the global-nature problems, such as (but not limited to) environmental sustainability or the Big Data problem.[1]

In the present talk, an overview of rationally designed coordination complexes will be given, which are envisaged to improve our understanding of molecular nanomagnetism (MNM) [2] as well Atom Transfer Radical Polymerization (ATRP)[3-5] (Scheme 1). In the former one, the focus will be put on how development of modular organic platforms could facilitate the development of magnetic devices based on Cu(II) ions. In the latter one, the copper(II) complexes will be demonstrated as viable systems to polymerize various monomers in a controlled manner through various ligand modifications.



Scheme 1. Graphical representation of projects presented during the talk

This work was supported by the National Science Center, Poland SONATA grant UMO-2020/39/D/ST4/01182.

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A few words about yourself...

I received my Ph.D from the Adam Mickiewicz University under the supervision of Prof. V. Patroniak and after almost 2-year post-doctoral stay in the Matyjaszewski Polymer Group at Carnegie Mellon University I returned to my *alma mater* to work towards my habilitation. My current research interests focus on the design and synthesis of advanced functional materials, with emphasis put on their (electro) catalytic, magnetic and biological properties. My free time is focused around various physical activities, most recently including weightlifting and powerlifting.

Activated biocarbon produced from olive pomace by physical, chemical and combined physical and chemical activation for CO_2 adsorption

Karolina KIEŁBASA[1], Şahin BAYAR[2], Esin Apaydın VAROL[2],
Joanna SREŃSCEK-NAZZAL[1], Monika BOSACKA[1], Beata MICHALKIEWICZ[1]

[1] West Pomeranian University of Technology in Szczecin, Piastów Ave. 42, 71-065 Szczecin, Poland
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This study aims to produce three kinds of activated biocarbon prepared from lignocellulosic biomass - olive pomace – by thermochemical treatment by steam, K_2CO_3, and simultaneous steam and K_2CO_3 at the temperature of 600 °C. The characterization of the activated biocarbon samples was carried out via several instrumental techniques such as TGA, XRD, FTIR, Raman, and N2 sorption at the temperature of 77 K. The CO_2 adsorption equal to 2.63 mmol/g and 1.64 mmol/g at the temperature of 0°C and pressure of 1 and 0.15 bar respectively was achieved. The activated biocarbons produced from olive pomace by combined physical and chemical activation showed considerable promise for flue gas carbon capture applications. The values of adsorption at 0.15 bar were more than 50% of adsorption at 1 bar pressure for all investigated activated carbons. High selectivity of CO_2 over N_2 equal to 29 was achieved for the gas composition of 15% v/v CO_2 and 75% v/v N_2. For CO_2 adsorption the small pore volume (diameter ≤0.79 nm for 1 bar and diameter ≤ 0.55 nm for 0.15 bar) at the temperature of 0 °C was crucial and the chemistry of the surface is not very important. Fig. 1 shows the way from the olive pomace to good CO_2 sorbent.

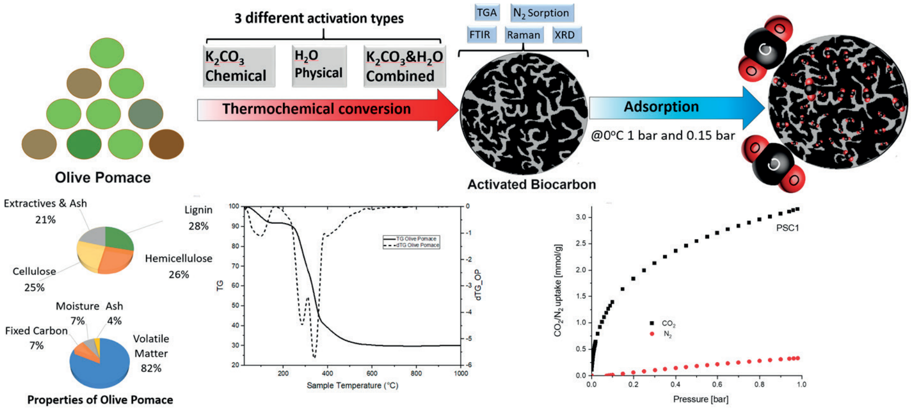

Fig 1. From raw material to good CO_2 sorbent

A few words about yourself...

My work is my first hobby so I'm interested in adsorption of gases, catalysis and methane conversion.

I like also to ride a bike, hike in the mountains and my three cats. Two live with me at home and one at my allotment.

*Mortreux catalytic systems for alkyne metathesis – a summary of the journey**

Maciej ZARANEK, Jakub ROBASZKIEWICZ, Piotr PAWLUĆ

Faculty of Chemistry and Centre for Advanced Technologies, Adam Mickiewicz University, Uniwersytetu Poznańskiego 8 and 10, 61-614 Poznań, Poland
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*In memory of professor André Mortreux (1943-2020).

Alkyne metathesis, a reaction discovered in the mid-1970s, although put away for decades, is gaining increasing interest in organic synthesis. [1] It offers a way to selectively obtain stereodefined macrocyclic alkenes in a sequence of ring-closing alkyne metathesis (RCAM) and hydrogenation reactions, which is not always possible in the case of olefin metathesis. The first homogeneous multicomponent catalyst consisted of molybdenum hexacarbonyl activated by 1,3-dihydroxybenzene at an elevated temperature and the catalytic systems derived from it are sometimes called *Mortreux catalytic systems*. [2]

In a classical multicomponent catalytic system, phenolic cocatalyst was used in an equimolar amount relative to the alkyne. Although molecular catalysts are also known, their preparation is most often laborious, and they require a rigorously inert atmosphere to operate. [3] We found that silanols are effective cocatalysts in multicomponent catalytic systems based on [$Mo(CO)_6$]. It is significant that triphenylsiloxy ligand is present in state-of-the-art molybdenum alkylidyne complexes, which are important alkyne metathesis catalysts. [4] Silanol cocatalysts are also a more environmentally friendly and harmless substitute for phenols. Another improvement of the reaction system that was possible due to the use of silanols was photochemical activation by ultraviolet (UV) light. [4] Examination of various Mo(0) complexes as potential molybdenum sources led to the discovery that especially *N*-donor ligand complexes led to a dramatic increase in reaction rate. [5]

Altogether, the improvements made to the multicomponent alkyne metathesis system could bring it into synthetic use and allow synthesis of more challenging chemicals. This presentation will give a summary of our research in this field.

National Science Centre (Poland) grant No. UMO-2019/35/B/ST4/00329 is gratefully acknowledged.

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A few words about yourself...

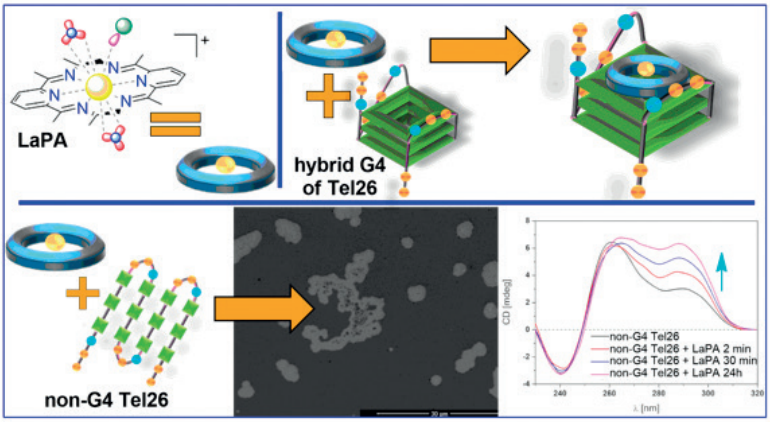
I was born in 1990 in a small town just north of Poznań, Poland. Chemistry has always been fascinating me, beginning with a home lab during my middle school. Besides chemistry, my interests cover bits of almost everything, especially computer science, symphonic metal music and home gardening. My favorite wine variety is Riesling. As far as I am addicted to pizza, I enjoy diverse cuisine.

Hexaaza Lanthanide(III) Macrocycles with G-quadruplex Stabilizing Effect

Ernest EWERT, Izabela POSPIESZNA-MARKIEWICZ, Violetta PATRONIAK, Marta FIK-JASKÓŁKA

Faculty of Chemistry, Adam Mickiewicz University, Uniwersytetu Poznańskiego 8, 61-614 Poznań, Poland
e-mail: martafik@amu.edu.pl

The G-quadruplex (G4) is a noncanonical DNA structure formed in the guanine-rich regions and preserved by Hoogsteen interactions. Only in 2013 G4s were shown to exist in human genome by visualization using an immunofluorescence staining method. They are mostly present in the key regulatory regions of the human genome such as promoters and gene bodies. Moreover, they were revealed to form at the ends of the chromosomes in the regions called telomeres. Hence, they are expected to be involved in maintaining the chromosome stability by preventing the accidental damage of genetic material. Telomeric DNA, when structured in the G4 form, cannot be recognized by telomerase. This inhibits the telomere lengthening, notably responsible for cancer cell immortality [1]



The synthesis, characterization and evaluation of the potential in biomedicine of Ln(III) macrocycles was explored in the presented research. The UV, CD and fluorescence spectroscopies were used to investigate the ability of hexaaza Ln(III) macrocycles to interact with different DNA models, including duplex DNA and oligonucleotides, forming various G4 structures: parallel Pu22, antiparallel Tel22, and hybrid type parallel–antiparallel Tel26. The macrocycles are able to stabilize the G4 structures, as well as to sequester the randomly folded G-rich sequences into thermally stable structures, even in absence of monovalent cations. [1,2,3]

Financial support from IDUB-UAM "Scientific conferences - support for the participation of scientists and doctoral students in prestigious scientific conferences" is gratefully acknowledged.

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A few words about yourself...

After my scientific work at the University I find a lot of satisfaction in cooking Mediterranean dishes and, most recently, baking for my friends and family. I have a dog called Nobel with whom we have long walks in the Zielonka Wilderness every day. In the evenings I enjoy listening to the rock and jazz music with my husband.

Functional Nanoinks Based on Metal Nanoparticles for Printed Electronics

A. AMANOVA[1]*, L. ASSAUD[2] and H. REMITA[1]

Adam Mickiewicz University, Uniwersytetu Poznańskiego 8, 61-614 Poznań, Poland (Times New Roman 10 points, italic)
[1] Institut de Chimie Physique, Université Paris-Saclay, 310 Rue Michel Magat, 91400, Orsay, France
[2] Institut de Chimie Moléculaire et des Matériaux d'Orsay, Université Paris-Saclay, 410 Rue du Doyen Georges Poitou, Orsay, France
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Conductive inks are recent progress in the electronics industry and widely used for the fabrication of flexible printed electronics. Silver is the commonly used metal for conductive inks due to its excellent electrical conductivity (6.3 x 10^7 Ω^{-1} m^{-1}) and stability to oxidation. However, the high price of silver and low resistance to electrochemical migration limits wide industrial applications. In this regard, copper can be a good alternative metal for conductive inks because of its equivalent conductivity to silver (5.96 x 10^7 Ω^{-1} m^{-1}), vast abundance, low price, and strong resistance to electrochemical migration [1], [2]. In the current work, we are developing inks based on silver and copper nanoparticles stabilized by polymers and synthesized by chemical, radiolytic, photochemical methods. The prepared inks have been deposited on the plasma-treated PET and glass substrates by the aerospray method. The inkjet printing method will be elaborated for printing electrical circuits after adjusting the viscosity, surface tension of inks using various additives. Sintering with thermal and photonic treatments was performed to increase the electrical conductivity through creation of percolation path. The 4 point-probe method was employed to measure the electrical conductivity after sintering. The obtained values of electrical conductivity (1.66 x 10^5 Ω^{-1} m^{-1}) of our inks are comparable to commercial conductive inks in the market. This holds promise to apply our conductive inks in printed electronics such as flexible displays and sensors.

References

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A few words about yourself...

My name is Aisara. I am a third-year PhD student in Chemistry. I am interested in the cross-section of Business and Chemistry. My hobby is reading about Art and poesy. I like trying different cuisine.

Unique topology of [PD_6AL_4] metallosupramolecular cage – synthesis and structural analysis

Weronika WACHOWICZ[1,2], Anna WALCZAK[1,2], Gracjan KURPIK[1,2] and Artur R. STEFANKIEWICZ[1,2]

[1] Faculty of Chemistry,Adam Mickiewicz University,Uniwersytetu Poznańskiego 8, 61-614 Poznań, Poland
[2] Center for Advanced Technology,Adam Mickiewicz University, Uniwersytetu Poznańskiego 10, 61-614 Poznań, Poland
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Metallosupramolecular cages are exceptionally promising architectures that are distinguished by sophisticated geometries, distinct physicochemical properties and various functions [1]. They have found a number of applications in different fields of chemistry, *e.g.* as stabilizers for exceedingly reactive structures [2] and as nanoreactors in supramolecular catalytic reactions [3].

We successfully obtained a tetrahedral bimetallic cage based on Al(III) and Pd(II) ions, and the ambidentate pyridyl-*β*-diketonate ligand (Fig. 1). This metallosupramolecular assembly was characterized in solid state (XRD, pXRD) as well as in solution (NMR, ESI-MS). In the described structure Al(III) ions are located in the vertices of the tetrahedron and Pd(II) ions in the middle of the edges. Although cubic and trigonal bipyramidal cages based on ambidentate pyridyl-β-diketones are known in the literature, heterometallic cage with tetrahedral geometry has never been reported. Due to the relative large capacity and the presence of such cations as Pd(II), the application potential will be investigated in the field of catalysis and gas sorption.

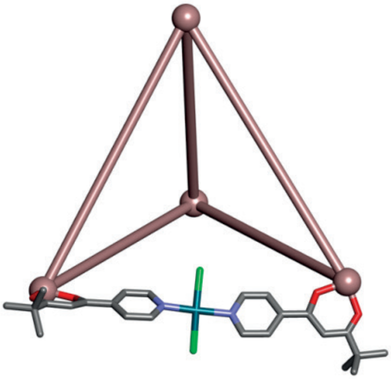

Fig. 1. Structure of tetragonal metallosupramolecular cage based on Pd(II) and Al(III) ions.

This work was supported by National Science Centre (grant SONATA BIS 2018/30/E/ST5/00032).

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A few words about yourself...

Master student of Chemistry of Materials at Adam Mickiewicz University in Poznań. My hobbies are: Quentin Tarantino's movies, fantasy books and hiking. Since 2010 member of Polish Scouting Association.

Influence of the aliphatic chain length of sulfonamide derivatives on complexing properties toward Ru(III) and Rh(III) ions

Aleksandra CIESIELSKA*, Sandra RAMOTOWSKA, Mariusz MAKOWSKI

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e-mail: aleksandra.ciesielska@phdstud.ug.edu.pl

Sulfonamides are frequently used antibiotics containing the -SO_2NH- group in their structure. Their action is based on competition with *p*-aminobenzoic acid, which leads to a disturbance in the synthesis of folic acid and, consequently, the limit of cell proliferation [1]. Additional modifications of the sulfonamide group allow for the extension of their biological activity of antifungal, anti-inflammatory, antitumor, and antiviral properties. Moreover, sulfonamides are capable to form complexes with biologically important metal ions, which can be applied in the design of new pharmaceuticals. Such coordination connections may also exhibit enhanced or modified (compared to the unbound ligands) biological activity [2] The stimulation of the antibacterial activity of sulfonamide drugs by binding them into complexes with Ru(III) ions has already been proven [3]. Ruthenium(II/III) ions are also known for their anti-cancer activity [4].

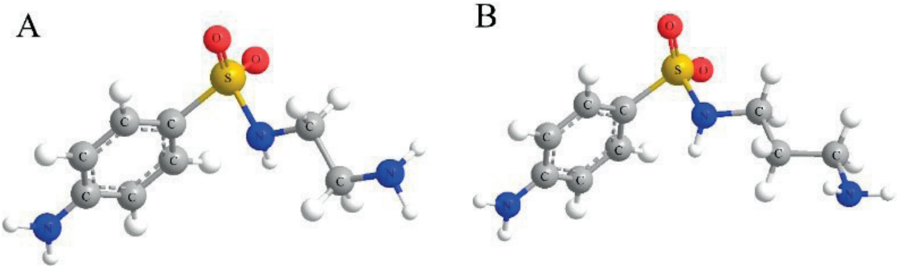

Figure 1. Structure of A. NethylS and B. NpropylS

Therefore, two sulfonamide derivatives differing in the length of alkylamino substituent (NethylS and NpropylS) [Figure 1] were synthesized, and then their structure and physicochemical properties were the subjects of our extensive research. Their characteristics with particular emphasis on the electrochemical profile, acid-base character, and complexing ability towards trivalent rhodium and ruthenium ions will be presented. The conducted research allows us to understand the influence of the aliphatic chain length of sulfonamide derivatives on the complexing properties of Ru(III) and Rh(III) ions, which may contribute to the design of new molecules with anticancer activity.

Acknowledgments: This work was supported by the National Science Centre (NCN) under Grant No. UMO-2019/33/B/ST4/00031

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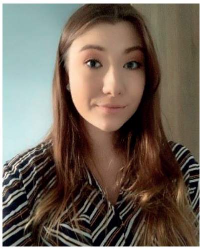
A few words about yourself...



I'm a Ph.D. student in the 2nd year of the Doctoral School of Exact and Natural Sciences. In 2018, I graduated from the University of Wrocław with a bachelor's degree, and in 2020 I received a master's degree from the University of Gdańsk.

Currently, I conduct my research at the Department of Bioinorganic Chemistry at the University of Gdańsk. I am interested in the analysis of sulfonamide ligands and metallopharmaceuticals. In my spare time, I like to travel around the world and try local cuisine.

Multicatalysis from renewable resources: a direct route to furan-based polyesters [1]

Lucie GUILLAUME, Adam MARSHALL, Nicolas NIESSEN, Pingping NI,
Régis M. GAUVIN* and Christophe M. THOMAS

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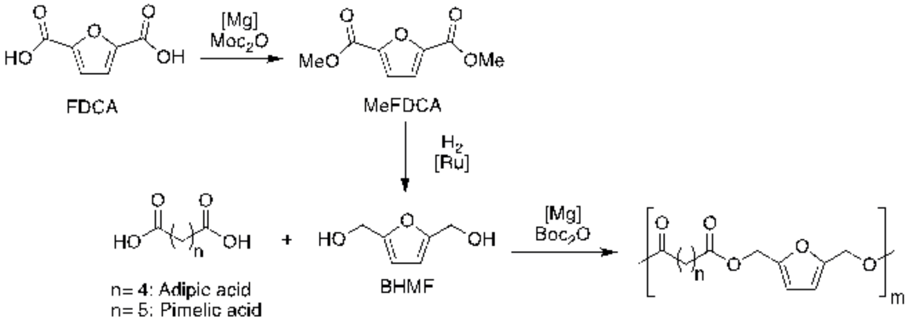
Due to environmental and availability concerns associated with the use of fossil feedstocks, the production of new types of materials using renewable resources is currently receiving a lot of attention. Furanic materials are one of the most promising classes of bio-based polymers, because their corresponding monomers are widely available in the market. As such, 2,5-bis(hydroxy- methyl)furan (BHMF) which is obtained by hydrogenation of 5- (hydroxymethyl)furfural (HMF), is becoming an interesting building block for the synthesis of high glass transition temperature polymers with good mechanical properties.[2] However, HMF is generally contaminated by coloured oligomeric impurities called humins, and their purification from HMF remains challenging. To circumvent this contamination issue, we investigated the synthesis of BHMF and the corresponding (co)polymers from bio-based 2,5-furanedicarboxylic acid (FDCA), which is a stable monomer produced on industrial scale, and free of humins.[3] By a combination of two commercial catalysts, our multicatalytic one-pot procedure allowed the synthesis of two key furanic intermediates, not contaminated by humins. These systems allow the dimethyl 2,5-furanedicarboxylate (MeFDCA) formation starting from FDCA, and then its hydrogenation to BHMF, as well as the polycondensation of the newly quantitatively formed monomer with aliphatic diols, providing direct access to furan based-polyesters without needing to isolate or purify any intermediates.



Scheme 1. Catalytic access to BHMF from FDCA, followed by BHMF copolymerization with aliphatic diols

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A few words about yourself...

Lucie Guillaume obtained her M.Sc from Ecole Supérieure de Chimie Physique Electronique de Lyon and Université Claude Bernard Lyon 1 in 2020. She is now a Ph.D candidate at Chimie ParisTech (PSL University) under the supervision of Dr. Régis M. Gauvin and Prof. Christophe M. Thomas. Her research focuses on the development of smart multicatalytic systems for the development of biobased and biodegradable polymers. Outside the lab, Lucie likes to read graphic novels and running throughout Paris.

Self-assembly of the hydrogen-bonded supramolecular polymers based on amino-acid derived biphenyldiimides

Adrianna SZMULEWICZ,[ab] Grzegorz MARKIEWICZ,[ab]
Łukasz MAJCHRZYCKI,[a] Maarten M.J. SMULDERS,[c]
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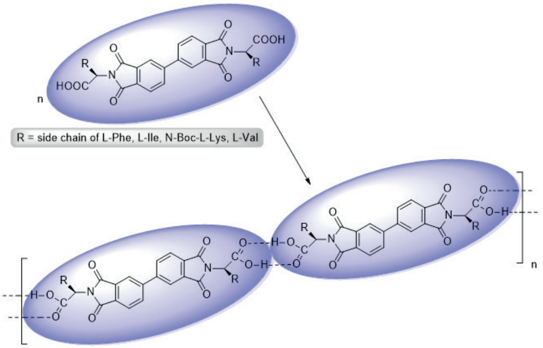
Hydrogen bonding between dissolved molecules can lead to the formation of more organized structures ranging from simple dimers and oligomers up to multidimensional polymers. Four symmetrical diimides from biphenyl-tetracarboxylic acid (BPDA) dianhydride and four distinct L-amino acids: phenylalanine (L-Phe), isoleucine (L-Ile), valine (L-Val) and N-(BOC)-lysine (N-Boc-Lys), were synthesized [1] and their self-assembly in non-polar solvents was studied with IR, ^{1}H NMR, and ECD spectroscopy, as well as AFM in the solid-state.

Our results have shown that in solution those compounds spontaneously form hydrogen-bonded rod-shaped polymers and that their polymerization follows an *equal-K*, *isodesmic* supramolecular polymerization mechanism in all cases.



This work was supported by National Science Centre (Grants: SONATA BIS 2018/30/E/ST5/00032 and PRELUDIUM UMO-2017/25/N/ST5/00451)

References

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A few words about yourself...

My main scientifical interests include organic and supramolecular chemistry. In my free time I like drawing and reading books, my favorite author is Stanisław Lem. I do sport climbing and I'm interested in handicrafts, especially in beadworking.

The ability to bind to DNA or BSA of new complexes with Schiff base LIGANDS

Martyna SZYMAŃSKA[a], Marta A. FIK-JASKÓŁKA[a],
Giovanni N. ROVIELLO[b], Izabela POSPIESZNA-MARKIEWICZ[a],
Maria JON[a], Małgorzata INSIŃSKA-RAK[a], Grzegorz DUTKIEWICZ[a],
Giuseppe CONSIGLIO[c], Maciej KUBICKI[a] , Violetta PATRONIAK[a]

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Complex compounds are of great importance in the development of medical inorganic chemistry, which is a rapidly developing field of research with great potential [1]. Numerous metal ions play a key role in biological systems and today many metal or metal salt compounds are routinely administered to patients for therapeutic benefit [2].

Various simple Schiff bases were obtained and complexed with different d-block metal ions [3-4]. Using various spectroscopic methods: UV-Vis, fluorescence, CD measurements their ability to bind to DNA and BSA was checked (Fig. 1). Moreover, the induction of G-quadruplexes was also investigated.

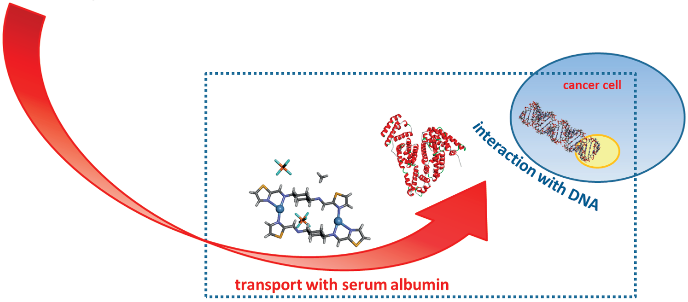

Fig. 1 Schematic representation of the interactions of complex compounds with biomolecules.

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The work was supported by the National Science Centre, Poland (grant no. 2020/37/N/ST4/00751).

A few words about yourself...

My name is Martyna Szymańska and I am a PhD student at the Faculty of Chemistry at the University of Adam Mickiewicz. I am interested in sport and cosmetic novelties. In my free time, I like to spend my time walking in forests, parks and gardens.

Tuning of slow magnetic relaxation in trityl-based lanthanide-supramolecular assemblies

Dawid MARCINKOWSKI[1], Daniel KRYSZAK[1], Maciej KUBICKI[1],
Violetta PATRONIAK[1], Robert PODGAJNY[2], Adam GORCZYŃSKI[1]

[1]Adam Mickiewicz University, Faculty of Chemistry, Uniwersytetu Poznańskiego 8, 61-614 Poznań, Poland
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Various future applications like molecular spintronics quantum information processing and high-density information storage has rendered Single Molecule Magnets (SMMs) a thoroughly studied domain of a priority importance. Along this line, numerous studies were performed to understand and predict unique properties of these systems, magnetic hysteresis below their blocking temperature (T_B) and magnetic bi-stability that rely on the effective energy barrier to spin reversal (U_{eff}). [1]

Triphenylmethane (trityl) group has been recognized as a supramolecular synthon in crystal engineering, molecular machine rotors and stereochemical chirality inductors in materials science. [2]

Herein we demonstrate for the first time how it can be utilized in the domain of molecular magnetic materials through tuning of the slow magnetic relaxation processes within the lanthanide single molecule magnets in tandem with other non-covalent interactions. Trityl-appended mono- (**L**^{1}) and bis-compartmental (**L**^{2}) hydrazone ligands were synthesized (**Figure 1**) and complexated with Dy(III) and Er(III) triflate and nitrate salts to generate six, effectively dinuclear complexes. While high level of isostructurality was observed in all coordination compounds within the given ligand class, the fourfold phenyl embraces and hydrogen bonding are responsible for transformation of monometallic complexes (**1** - **4**) into the pseudo-dimeric assemblies with the N^2O **L¹** ligand. [3]

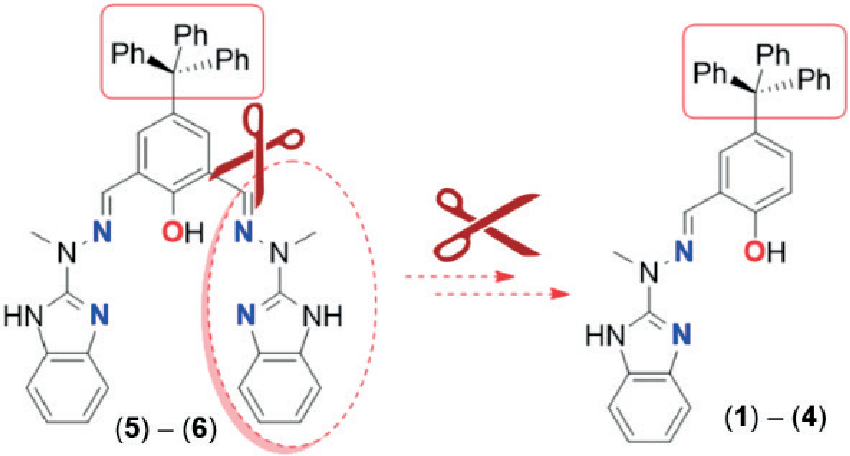

Figure 1. Structural representation of trityl-appended ligands used in this study in their meriodional conformations

This work was supported from the budget for science in 2018-2020, as a part of the Polish Ministry of Science and Higher Education project: Grant No. 0088/DIA/2018/47 in the frame of the "Diamond Grant" programme. D.M. is a scholarship holder of the Adam Mickiewicz University Foundation for the academic year 2021/2022.

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A few words about yourself...

I am a 3rd year Ph.D. student at the Adam Mickiewicz University in Poznań. My current research focuses on the design and synthesis of new Schiff base ligand complexes with lanthanide(III) ions especially for application in field of Single Ion Magnets. I spend my free time in garage on repairing my Trabant (small vehicle from German Democratic Republic) and Simson (motorbike also from GDR). A few months ago I started a new journey with upholstery and wood restoration. Until now I restored a few chairs and armchairs from the 60s and 70s. And I still improve my skills in this field.

Capping of the macrocyclic ligand platforms as the approach for the design of efficient Single Molecule magnets

Dominika PRĘTKA, Dawid MARCINKOWSKI, Agnieszka SIWIAK,
Violetta PATRONIAK, Adam GORCZYŃSKI

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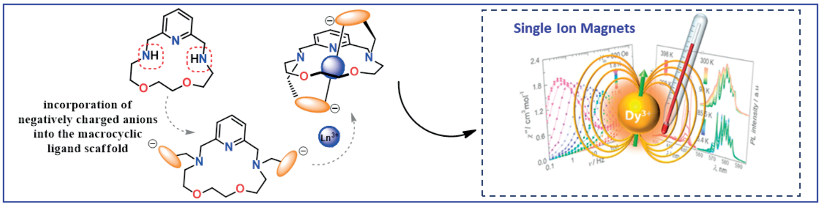
There is an increasing interest in lanthanide-based Single Ion Magnets, due to the relatively easy control of the ligand fields and magnetic anisotropy of energetic states. These result in high relaxation energy barriers and blocking temperatures – a necessity for high-performance SIM. However, the main challenge continues to be not only the ability to function at more practical temperatures, but at the same time to show good air and heat stability [1], [2]. In particular, polyaza macrocycles are able to coordinate lanthanides, thus forming highly thermodynamically and kinetically stable systems. In addition, facile functionalization at the secondary ligand *N*-donors makes the tuning of the architecture straightforward in terms of the structure/property studies [3]. In the present project we aim to synthesize and study a series of lanthanide(III) macrocyclic complexes, which are envisaged to improve our understanding of rationally designed Single Ion Magnets (Scheme 1).



Scheme 1 Representative Table of Content of the research project. Partially adapted from [4]

This work was supported by (PI: AG): SONATA grant UMO-2020/39/D/ST4/01182 from National Science Centre, Poland, (PI: DM) from the budget for science in 2018-2020, as a part of the Polish Ministry of Science and Higher Education project: Grant No. 0088/DIA/2018/47 in the frame of the "Diamond Grant" programme and IDUB-UAM "Scientific conferences – support for the participation of scientist and doctoral students in prestigious scientific conferences"

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A few words about yourself...

I always spend my free time in an active way, especially I love swimming and playing basketball, which I often do it with my friends. Besides science and doing sports I am a great fan of watching tennis and cooking.

Coordination-induced modular supramolecular hierarchical assemblies of cyclodextrins

Haipeng LIU[1], Mickaël MÉNAND[1], Bernold HASENKNOPF[1],
Yongmin ZHANG[1], Matthieu SOLLOGOUB[1]

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Cooperative self-assembly[1-2] is a powerful tool to construct elaborate architectures in a controllable approach. For example, nature heavily relies on cooperativity to build the highly complex components of organisms from smaller units.[3] However, on the basis of individual building blocks, the controllable construction of diverse topological morphologies through supramolecular self-assembly is crucial, but remains a great challenge. We developed here (Fig.1) such a system based on precisely functionalized cyclodextrins and studied the corresponding supramolecular assemblies based on both host-guest interaction and metal coordination.

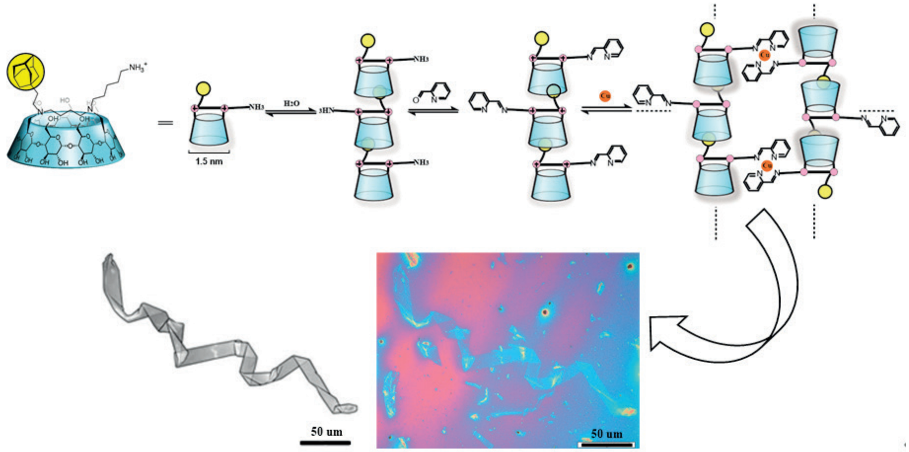

Fig. 1. Structure of precisely functionalized cyclodextrin and the process of this original modular self-assembly

To this end, we have synthesized a cyclodextrin bearing a ligand that coordinates copper(I) to form dimer complexes, and a hydrophobic group (adamantyl) to promote self-assembly via inclusion complex. This combination of interactions induces self-assembly in 2D micrometer scaled sheets and ribbons. Furthermore, the 2D sheets/ribbons can be converted into 1D fibers by controlling the medium.

I will present the details of the synthesis and Physico-chemical study of this original modular self-assembly.

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A few words about yourself...

I like playing basketball, table tennis, and mahjong.
My favorite food is dumplings

Electrosensors to voltammetric detection of pharmaceuticals with a pyrazine scaffold

Marta DOMŻALSKA[1], Aleksandra M. DĄBROWSKA[1],
Dawid CHOJNOWSKI[2], Mariusz MAKOWSKI[1], Agnieszka CHYLEWSKA[1]

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The pharmaceuticals with a pyrazine motif have found many applications in medicine, *e.g.* as an anticancer, antimycotic, and antituberculosis drug [1]. However, the use of these substances is associated with side effects such as neutropenia or skin eruptions [2]. To prevent them, it was necessary to develop a method to detect the pyrazine derivatives in body fluids.

Electrochemical techniques are more often used to indicate substances in samples compared to chromatographic or spectrophotometric techniques. This is due to the greater sensitivity of the technique, as well as significantly lower costs of the analysis [3]. Numerous studies have shown that the use of modified glassy carbon electrodes (GCEs) with the use of L-amino acids (L-Aa) coatings polymers are characterized by a wider range of linearity, and lower limits of detection and quantification [4]. The biosensors obtained by L-Aa electropolymerization have found application in the detection of pyrazine derivatives *e.g.* in serum, pharmaceuticals, and urine [5].

The work has shown nine electrosensors for the determination of drugs with a pyrazine scaffold – pyrazinamide (PZA), pyrazine-2-amidoxime (PAOX), pyrazine-2-thiocarboxamide (PTCA), and bortezomib (BZM) which is the only used proteasome inhibitor against multiple *myeloma*. The modified GCEs for cyclic voltammetry (CV) were prepared by electropolymerization using aqueous solutions of L-glycine, L-alanine, and L-lysine (at a concentration of 1, 10, and

100 mM for each reagent respectively). The sensors were analyzed under a 3D microscope and used for stoichiometric tests [6].

Acknowledgments: This work was supported by the National Science Center (NCN) under Grant No. 2019/03/X/ST4/00038.

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A few words about yourself...

I graduated from my Master's degree in 2021 at the Faculty of Chemistry of the University of Gdańsk. My research interests are focused on bioinorganic chemistry, with particular emphasis on: coordination chemistry, electrochemistry, and chemistry of metallopharmaceuticals. I love traveling, baking, and singing – I'm a member of the Gdańsk University Choir since 2016. In my free time, I walk by the sea and listen to music (depending on my mood).

Life quote: *You will never win if you never begin.*

C20-EPI-amino derivatives of salinomycin – the scavengers of cancer stem-like cells

Dominika CZERWONKA, Sebastian MÜLLER, Tatiana CAŃEQUE,
Ludovic COLOMBEAU, Adam HUCZYŃSKI, Michał Antoszczak,
Raphaël RODRIGUEZ

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Salinomycin (Sal, Figure 1) is a well-known representative of natural polyether ionophore antibiotics with a broad spectrum of biological activity, such as antiparasitic, antimalarial, antiviral, and antifungal.[1] Sal has also been announced to be 100 times more effective towards breast cancer stem cells (CSCs) than commonly used cytostatic drugs – Taxol.[2] CSCs represent a small subpopulation of cancer cells within the tumour that are resistant to conventional therapy, leading to cancer relapse and metastasis.[2]

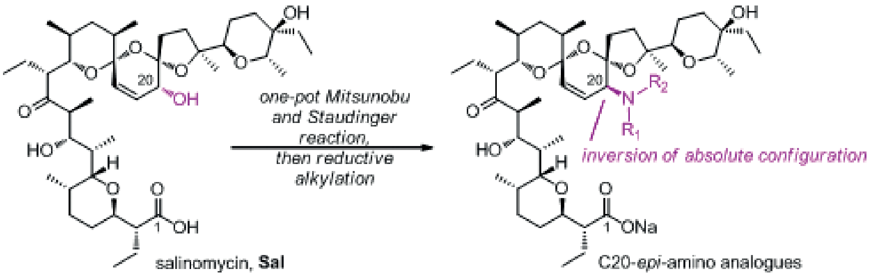

Figure 1. Synthesis of C20-*Epi*-Amino Derivatives of Salinomycin.

In search of small molecules to selectively target CSCs, we have designed a library of 18 new Sal derivatives using a one-pot Mitsunobu–Staudinger procedure (Figure 1), containing mono- or disubstituted C20-*epi*-amine groups.[3] The biological activity of these compounds was evaluated against human mammary mesenchymal HMLER $CD24^{low}/CD44^{high}$ cells, a well-established model of breast CSCs, and its isogenic epithelial cell line (HMLER CD24^{high}/CD44^{low}) lacking CSC properties. The majority of derivatives were characterized by low nanomolar activities and high selectivity for the mesenchymal state. At the same time, these compounds are the most potent and selective derivatives of Sal reported so far.[3]

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A few words about yourself...

I am a medicinal/organic chemist, covalently bonded to my fiancé Szymon and our Australian Shepherd. Last year I fell in love with Paris, I believe it is my "safe place on Earth". I love reading thrillers and listening to crime podcasts. I am also a yoga enthusiast. Favorite food: any kind of cheese!

Supramolecular architectures: from high-spin molecules to single-molecule magnets

Ingrid SUZANA,[1] Moritz MALISCHEWSKI[2] and Valérie MARVAUD[1]

[1]IPCM-CNRS, UMR 8232, Sorbonne Université, Paris, France,
[2]Fachbereich Chemie, Freie Universität, Berlin, Deutschland.
e-mail: Ingrid.suzana@sorbonne-universite.fr

Design of molecular materials has attracted a great deal of attention in recent years. Owing to their molecular nature, they are associated with soft chemistry routes, light density, optical transparency or tuneable physical properties. More specifically, our interest is focused upon supramolecular architectures that have the potential of featuring luminescent, magnetic and photo-switching properties.

Hetero-poly-metallic complexes combining up to four different metallic ions, are obtained according to a smart supramolecular approach that consists in using "complexes as ligands". In other words, coordination complexes, either mononuclear or polynuclear, are employed as functional precursors for multifunctional assemblies such as hetero-tetra-metallic complexes or coordination dendrimers. This method is advantageous as it affords many variations in synthetic parameters, and the properties of the precursors are well established.

Our synthetic strategy essentially relies on oxalate- and cyanide-based coordination chemistry.[1] The key building blocks are original trinuclear complexes that feature high-spin molecule, single-molecule magnet or luminescent properties. And second, paramagnetic oxalates and photo-switching cyano complexes act as structure-directing entities for supramolecular and dendritic assemblies.

To date, we have developed the first multifunctional hetero-tetra-metallic complexes having both magnetic and photo-switching properties. The versatility of the synthetic approach was demonstrated by getting several families of hetero-tetra-metallic complexes, with no less than 18 different compounds.[2] In this presentation, we report as well the first instance of metallodendrimers with single-molecule magnet properties, a fascinating tuneable decanuclear architecture.[3]

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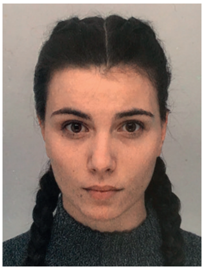
A few words about yourself...



Ingrid Suzana is French-Portuguese PhD student at IPCM in Paris within the E-POM team under the supervision of Dr. Valérie Marvaud. As part of her Bachelor's degree at UPMC, she participated in the PIL atlantico Paris-Lisbon program as an Erasmus student and undergraduate research assistant on electropolyremisable iron^{III} complexes in the Inorganic and theoretical chemistry group under the supervision of Dr. Paulo Martinho and Dr. Ana Vicente. Then, she pursued her master's degree at Sorbonne University and University of British Columbia as part of the TACECHEM Paris-Vancouver master's program where she worked on Platinum based macrocycles in the MacLachlan group. Ingrid is well-travelled and solo backpacking in foreign countries with no plans whatsoever is her favourite activity. Back home, she essentially spends her time socialising with friends, going to music events, and cycling all over the city.

Vacuum-filtered solution-processed MoS_2 flakes for flexible thin-film vapor sensors

Martyna MAŃKA[1], Marta FIK-JASKÓŁKA[1], Rafael Furlan OLIVEIRA[2,3], Stefano IPPOLITO[3], Verónica Montes GARCIA[3], Artur CIESIELSKI[3,4], Paolo SAMORÌ[3], Violetta PATRONIAK[1]

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The ability to detect gas molecules, especially toxic ones, is very important in monitoring food putrefaction, environmental pollution, methane detection in mines, carbon monoxide in buildings, etc. Exhaled air is also a valuable source of information about the health of patients. The presence of various chemical compounds in it may indicate various diseases, and the analysis of their content would allow the detection of diseases in the early stages, would enable the observation of the pace of slowly progressing diseases, which initially do not give too many symptoms, and would also ensure control over the course of treatment. [1] [2] [3]

As part of the project, sensors consisting of PTFE filters, exfoliated molybdenum(IV) disulfide and chrome-gold electrodes were constructed. (Fig. 1) The sensors were characterized using: UV-vis spectroscopy, optical microscopy, X-ray photoelectron spectrometry (XPS), scanning electron microscopy (SEM), atomic force microscopy (AFM) and Raman spectroscopy. The concept of the work was to investigate the sensitivity of the exfoliated MoS_2 to selected solvent vapors, as well as to check the signal stability and durability of the designed sensors.

Figure 1 Schematic presentation of MoS2-based sensor.

Part of the research carried out was carried out during the five-month student internship at the Laboratory of Nanochemistry of prof. Paolo Samorì at the Institut de Science et d'Ingénierie Supramoléculaires in Strasbourg under the scientific supervision of Dr. Artur Ciesielski.

This work was supported by IDUB-UAM "Scientific conferences – support for the participation of scientist and doctoral students in prestigious scientific conferences"

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A few words about yourself...

In my free time, I like to read sci-fi books and detective stories, bake cakes and cookies, travel, listen to music, go to concerts, watch old movies and musicals. I like Italian cuisine.

The multifunctionality of complexes based on hydrazone-type ligands

Daria BRYKCZYŃSKA, Aleksandra SIKORA, Anna ORZECHOWSKA, Maciej KUBICKI, Grzegorz HRECZYCHO, Violetta PATRONIAK, Adam GORCZYŃSKI

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Hydrazone metal complexes are commonly known systems due to facile synthesis and their versatile applications in coordination chemistry, biological, biomimetic and catalytic activities or structural dynamics. Mutual interactions of the imine-ligand and the transition metal atom focusing on supramolecular interactions such as hydrogen bonds or coordination bond have a large impact on the structure of the supramolecular architectures obtained, and thus on their properties [1-4].

Herein, having three hydrazone-type ligands, the influence of the binding subunits on the formation of various structures of complexes and the (bio)catalytic activity in the field of biomimetics (aryl *O*-demethylase, phenoxazinone synthase) and catalysis (hydrosilylation) was investigated (Figure) [5].

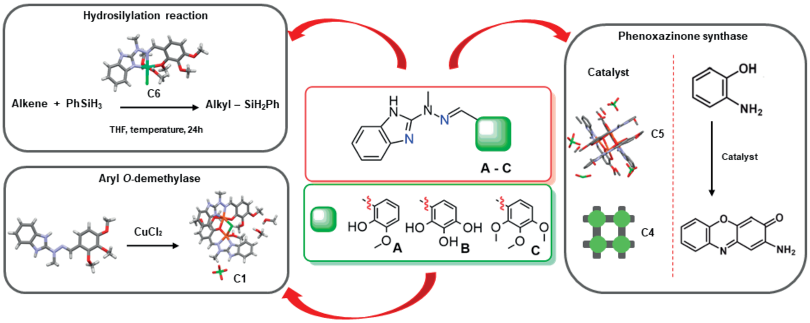

Figure. Schematic presentation of hydrazone ligands and chosen coordination systems, aimed at studies on: hydrosilylation and mimicking aryl *O*-demethylase and mimicking phenoxazinone synthase

This work was supported by (PI: AG): SONATA grant UMO-2020/39/D/ST4/01182 from National Science Centre, Poland and IDUB-UAM "Scientific conferences - support for the participation of scientists and doctoral students in prestigious scientific conferences"

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5. D. Brykczyńska, A. Gorczyński, V. Patroniak, data unpublished.

A few words about yourself...

My hobbies are reading books especially detective stories. Additionally, I'm interested in herbalism and photography. In my spare time, I enjoy meeting up with my friends and family. I love all dishes with potatoes.

Tuning the solubility of the octameric nanocapsules for selective guest binding and release

Wiktoria ADAMSKA, Grzegorz MARKIEWICZ, Artur R. STEFANKIEWICZ

Faculty of Chemistry, Adam Mickiewicz University, Uniwersytetu Poznańskiego 8, 61-614 Poznań, PolandCenter for Advanced Technology, Adam Mickiewicz University, Uniwersytetu Poznańskiego 10, 61-614 Poznań, Poland
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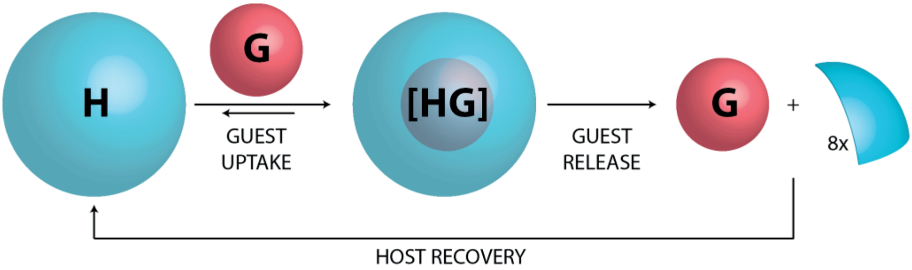
Non-covalent interactions such as hydrogen bonds, π-π interactions, and van der Waals forces are the foundation of supramolecular chemistry. The use of these weak intermolecular forces makes it possible to control molecular self-assembly and recognition processes, thus yielding complex supra-structures with tuneable functions and properties from synthetically simple molecules. Over the years, a wide variety of self-assembled supramolecular structures, including capsules, were obtained, [1] which attract significant interest from many researchers, mainly due to their unique ability to bind the guest molecules inside well-defined internal voids.



A few years ago, our group presented the first hydrogen-bonded octameric capsule based on the benzene-1,3,5-tricarboxylic acid (BTA) core, held together by 48 cooperative hydrogen bonds. [2] With a large internal cavity of 1719 Å^3, the capsule has been proven to be a good receptor for C_{70} and C_{60} fullerenes, where encapsulation of C_{70} was found to be the more favorable. In our recent work, we present the synthetic pathway to tune and target the solubility of the octameric capsules for preparative guest separation along with the encapsulation of the catalytically-active species.

This work was supported by National Science Centre (Grant: SONATA BIS 2018/30/E/ST5/00032)

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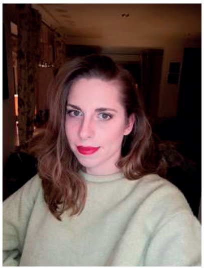
A few words about yourself…



I always have a unique perspective when approaching an issue due to my broad range of interests and hobbies. One of my interests is traveling, discovering the world, and learning about new cultures. I also like reading books, playing board games. I believe that we are way more productive when we are working with people with whom we enjoy spending time.

Influence of nano lubricants on the static friction coefficient

Katarzyna NOWAK, Leszek SZOJDA

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e-mail: Leszek.szojda@polsl.pl

The study presents part of the scope of work related to the doctor dissertation covering a prototype solution for the rectification of residential buildings that have been inclined as a result of terrain deformation. The presented idea is based on the solution of sliding the object along the specially formed contact surface of the doubled foundation. The key issue is to determine the magnitude of the horizontal forces that will allow this process to be carried out. In order to reduce these values, the contact surface between the foundations is equipped with a sliding layer, the leading component of which is grease.

Due to the lack of a basic physical value, which is the static friction coefficient of the lubricant with additives in the form of nanolubricants, which is necessary to determine the magnitude of the forces applied to the structure, tests of this size were planned in a specially prepared device. The tests are carried out in the laboratory of the Faculty of Civil Engineering of the Silesian University of Technology in Gliwice. The device for carrying out the tests enables the determination of the force pushing out the element with the values of stresses perpendicular to the contact surface in the range from 100 kPa to 300 kPa, which is a value corresponding to the range of ground loads caused by the building. The tests were also carried out at temperatures from 10°C to 50°C, i.e. in the field of real applications.

The tests were carried out on the Lotos Mobilux EP1 product, which allowed to obtain the value of the static friction coefficient at a temperature of 20°C and a pressure of 300 kPa at the level of 0.117.

After the addition of nanolubricate at a concentration of 0.01% under the same conditions, the friction coefficient was reduced to the value of 0.106. At the moment, the research is still being carried out, and the activities related to patent protection are being carried out in relation to the devices and parameters of nanolubricants.

A few words about myrself...

I like to skiing, hiking and ... DIY. In addition, I like: good cars, good food and the quiet mountain and seaside surroundings. Unfortunately, my life is tainted with work – I can see building damage everywhere ...

Metal/Covalent organic frameworks (MOF@COF) as high-Performance energy storage materiaLs

Dawid PAKULSKI,[1,2] Adam GORCZYŃSKI,[3] Dawid MARCINKOWSKI,[3] Paolo SAMORÌ,[4] Artur CIESIELSKI[2,4]

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The unavoidable transition from fossil fuels to renewable energy sources together with the ever-growing worldwide energy demand have triggered the search for novel and efficient energy storage systems (ESS) that can support the transition and the energy supply for on demand utilization. To this end, electrochemical energy storage technologies, and in particular rechargeable batteries and supercapacitors (SCs) hold great potential for technological breakthroughs in the field of energy.[1,2]

MOF@COF hybrids is a recently developed direction in field of high-performance supercapacitors, which is very promising and has not yet been well explored. MOF@COF composites will combine high porosity with structural precision, versatility and tunability. As new class of electrode materials for SCs, they offer great opportunities for achieving superior electrochemical properties.

Herein, we synthesized a unique MOF@COF hybrid, which was generated through the on-surface condensation of the MOF-UIO-66-NH_2 with 1,3,5-triacetylbenzene, which yields MOF-UIO-66-NH_2 (TACB). Subsequently, the COF shell was generated on MOF-UIO-66-NH_2 (TACB) *via* condensation with 2,3,5,6-tetraaminobenzoquinone (TABQ). The application of MOF@COF as supercapacitors electrodes was explored in a two-electrode system using 1M tetraethylammonium tetrafluoroborate in acetonitrile as an electrolyte. The MOF@COF hybrid exhibited an excellent stability (capacitance retention >90% after 5,000 cycles) as well as a high specific capacitance (~100 F/g) at a scan rate of 2 mV/s, which are one of the highest values ever achieved in this type of electrode materials.

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This work was supported by the National Science Center Grant. No 2020/36/C/ST5/00247

A few words about yourself...

Dr Dawid Pakulski received his PhD degree in the frame of the "*co-tutelle*" program at Adam Mickiewicz University in Poznań and the University of Strasbourg. His current research focuses on the design and synthesis of polymeric and hybrid materials for applications in energy storage. In his spare time, the young chemist is engaged in DIY, riding a motorcycle and passion for Asian cuisine.

NEW Complexes of d- and f-metal ions with N,(O)-donor LiGands

Violetta PATRONIAK

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The synthesis of supramolecular complexes is currently one of the most explored areas of coordination chemistry due to their chemical and physical properties, unusual structures, and potential applications [1]. Characterization and study of the properties of new complexes of d- and f-metal ions are scientific goals pursued for many years by our research group. The presented topic of the talk will concern transition metal complexes with N-heterocyclic ligands, with special emphasis on their luminescent, magnetic, catalytic, photocatalytic, electrocatalytic and biological properties. [2-7]

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Acknowledgements: IDUB-UAM "Scientific conferences - support for the participation of scientists and doctoral students in prestigious scientific conferences"

A few words about yourself...

I enjoy encouraging my younger colleagues to take on creative challenges, as the joy and pride in their successes is priceless. I love to travel, preferably to Italy (Catania) and France (Paris). I like reading, recently Ken Follett and Manuela Gretkowska. I often listen to actor's songs. I can watch the polish series "Ranczo/The Ranch" over and over again just like comedies from the communist times, with "Miś/Teddy Bear" at the forefront. And I like the most is... eat delicious food, as you can see on the attached picture...

Paris, 23-25 May 2022

FRENCH-POLISH SYMPOSIUM on CHEMISTRY

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Académie Polonaise des Sciences – Centre Scientifique à Paris 74. rue Lauriston – 75116 Paris

Monday, 23rd May 2022 3:30 PM

OPENING CEREMONY
Rector of AMU
Prof. Bogumiła Kaniewska
and
ROUND TABLE

INVITED LECTURES
Prof. Regis Gauvin
Prof. Miłosz Pawlicki

Tuesday, 24th May 2022 10:00 AM

INVITED LECTURES
Dr. Wojciech Danowski
Dr. Marta Fik-Jaskółka
Dr. Adam Gorczyński
Prof. Bernold Hasenknopf
MSc. Enxu Liu
Prof. Wojciech Macyk
Prof. Mariusz Makowski
Dr. Grzegorz Markiewicz
Prof. Valerie Marvaud
Prof. Beata Michalkiewicz
Prof. Violetta Patroniak
Prof. Piotr Pawluć
Prof. Artur R. Stefankiewicz
Prof. Leszek Szojda
Dr. Ewelina Wieczorek-Szweda
Dr. Maciej Zaranek

Wednesday, 25th May 2022 10:00 AM

PhD and MSc STUDENTS ORAL PRESENTATIONS
Wiktoria Adamska
Aisara Amanova
Daria Brykczyńska
Aleksandra Ciesielska
Dominika Czerwonka
Marta Domżalska
Lucie Guillaume
Haipeng Liu
Martyna Mańka
Dawid Marcinkowski
Dominika Prętka
Adrianna Szmulewicz
Ingrid Suzana
Martyna Szymańska
Weronika Wachowicz

UAM
Adam Mickiewicz University
Poznań

PAN
Polish Academy of Sciences
Academie Polonaise des Sciences
Centre Scientifique à Paris

Affiche

PROGRAMME

FRENCH-POLISH SYMPOSIUM ON CHEMISTRY 2022

Académie Polonaise des Sciences – Centre Scientifique à Paris 74. rue Lauriston – 75116 Paris

Monday 23rd

SESSION 1

15:00 **REGISTRATION & ROUND TABLE OVER A COFFEE**

15:50 **Prof. BOGUMIŁA KANIEWSKA**, ***Adam Mickiewicz University, Poznań***
OPENING CEREMONY

16:00 **Prof. REGIS GAUVIN**, ***Institut de Recherche de Chimie Paris***
THERE AND BACK AGAIN: ACCEPTORLESS DEHYDROGENATIVE COUPLING OF ALCOHOLS AND RELATED CATALYSIS

16:30 **Prof. MIŁOSZ PAWLICKI**, ***Jagiellonian University***
AN OLD CONCEPT IN A NEW LIGHT - ON LOCAL AND GLOBAL DELOCALISATIONS IN STRONGLY CONJUGATED SYSTEMS

Tuesday 24th

SESSION 2

Chairman: Prof. BERNOLD HASENKNOPF

09:30 **REGISTRATION & MORNING COFFEE**

10:00 **Prof. VALERIE MARVAUD**, ***Sorbonne Université***
LIGHT-INDUCED MAGNETISM IN MOLYBDENUM AND TUNGSTEN COMPLEXES

10:15 **Prof. ARTUR R. STEFANKIEWICZ**, ***Adam Mickiewicz University, Poznań***
SUPRAMOLECULAR ASSEMBLIES – FROM MOLECULAR COMPONENTS TO FUNCTIONAL NANOSTRUCTURES

10:30 **Prof. MARIUSZ MAKOWSKI**, ***University of Gdańsk***
APPLICATION OF THE SWITCHSENSE TECHNIQUE FOR THE STUDY OF SMALL MOLECULES AFFINITY TO DNA

10:45 **Dr. EWELINA WIECZOREK-SZWEDA**, ***Adam Mickiewicz University, Poznań***
SYNTHESIS AND PHYSICOCHEMICAL CHARACERIZATIN OF AMINO AND DIAZEPINOPORPHYRAZINES WITH POTENTIAL BIOLOGICAL ACTIVITY

11:00 **Prof. PIOTR PAWLUĆ**, ***Adam Mickiewicz University, Poznań***
SCHIFF BASE COBALT AND IRON COMPLEXES AS A NEW FAMILY OF CATALYSTS FOR HYDROSILYLATION REACTION

11:15 **Prof. WOJCIECH MACYK**, ***Jagiellonian University***
HOW TO DESIGN AN EFFICIENT PHOTOCATALYST? ON FACTORS INFLUENCING ACTIVITY OF PHOTOCATALYSTS

11:30 **Dr. GRZEGORZ MARKIEWICZ**, ***Adam Mickiewicz University, Poznań***
DYNAMIC SELF-ASSEMBLY AND SELF-SORTING EQUILIBRIA OF THE HYDROGEN-BONDED SUPRAMOLECULAR CAPSULES

11:45 **Dr. WOJCIECH DANOWSKI**, ***Institut de science et d'ingénierie supramoléculaires (ISIS)***
OVERCROWDED ALKENES IN SOLIDS: FROM UNIDIRECTIONAL ROTATION TO FUNCTIONAL MATERIALS

12:00 **COFFEE BREAK**

SESSION 3

Chairman: Prof. VALERIE MARVAUD

12:30 **Prof. BERNOLD HASENKNOPF**, ***Sorbonne Université***
STRUCTURES, DYNAMICS AND APPLICATION OF CYCLODEXTRIN-POLYROTAXANES

12:45 **ENXU LIU**, ***Sorbonne Université***
MOLECULAR INFORMATION RATCHET BASED ON CYCLODEXTRIN [2]ROTAXANE

13:00 **Dr. ADAM GORCZYŃSKI**, ***Adam Mickiewicz University, Poznań***
IMPROVING THE UNDERSTANDING OF MOLECULAR NANOMAGNETISM AND ATOM TRANSFER RADICAL POLYMERIZATION THROUGH THE RATIONAL DESIGN OF CU(II) COORDINATION COMPOUNDS

13:15 **Prof. BEATA MICHALKIEWICZ**, ***West Pomeranian University of Technology in Szczecin***
ACTIVATED BIOCARBON PRODUCED FROM OLIVE POMACE BY PHYSICAL, CHEMICAL AND COMBINED PHYSICAL AND CHEMICAL ACTIVATION FOR CO2 ADSORPTION

13:30 **Dr. MACIEJ ZARANEK**, ***Adam Mickiewicz University, Poznań***
MORTREUX CATALYTIC SYSTEMS FOR ALKYNE METATHESIS - A SUMMARY OF THE JOURNEY

13:45 **Dr. MARTA FIK-JASKÓŁKA**, ***Adam Mickiewicz University, Poznań***
HEXAAZA LANTHANIDE(III) MACROCYCLES WITH G-QUADRUPLEX STABILIZING EFFECT

Wednesday 25th

SESSION 4

Chairman: Dr. ADAM GORCZYŃSKI

09:30 **REGISTRATION & MORNING COFFEE**

10:00 **AISARA AMANOVA**, ***Université Paris-Saclay***
FUNCTIONAL NANOINKS BASED ON METAL NANOPARTICLES FOR PRINTED ELECTRONICS

10:10 **WERONIKA WACHOWICZ**, ***Adam Mickiewicz University, Poznań***
UNIQUE TOPOLOGY OF $[Pd_6Al_4]$ METALLOSUPRAMOLECULAR CAGE - SYNTHESIS AND STRUCTURAL ANALYSIS

10:20 **ALEKSANDRA CIESIELSKA**, ***University of Gdańsk***
INFLUENCE OF THE ALIPHATIC CHAIN LENGTH OF SULFONAMIDE DERIVATIVES ON COMPLEXING PROPERTIES TOWARD Ru(III) AND Rh(III) IONS.

10:30 **LUCIE GUILLAUME**, ***Institut de Recherche de Chimie Paris***
MULTICATALYSIS FROM RENEWABLE RESOURCES: A DIRECT ROUTE TO FURAN-BASED POLYESTERS

10:40 **ADRIANNA SZMULEWICZ**, ***Adam Mickiewicz University, Poznań***
SELF-ASSEMBLY OF THE HYDROGEN-BONDED SUPRAMOLECULAR POLYMERS BASED ON AMINO-ACID DERIVED BIPHENYLDIIMIDES

10:50 **MARTYNA SZYMAŃSKA**, ***Adam Mickiewicz University, Poznań***
THE ABILITY TO BIND TO DNA OR BSA OF NEW COMPLEXES WITH SCHIFF BASE LIGANDS

11:00 **DAWID MARCINKOWSKI**, ***Adam Mickiewicz University, Poznań***
TUNING OF SLOW MAGNETIC RELAXATION IN TRITYL-BASED LANTHANIDE-SUPRAMOLECULAR ASSEMBLIES

11:10 **DOMINIKA PRĘTKA**, ***Adam Mickiewicz University, Poznań***
CAPPING OF THE MACROCYCLIC LIGAND PLATFORMS AS THE APPROACH FOR THE DESIGN OF EFFICIENT SINGLE MOLECULE MAGNETS

11:20 **COFFEE BREAK**

SESSION 5

Chairman: Dr. MACIEJ ZARANEK

12:00 **HAIPENG LIU**, ***Sorbonne Université***
COORDINATION-INDUCED MODULAR SUPRAMOLECULAR HIERARCHICAL ASSEMBLIES OF CYCLODEXTRINS

12:10 **MARTA DOMŻALSKA**, ***University of Gdańsk***
ELECTROSENSORS TO VOLTAMMETRIC DETECTION OF PHARMACEUTICALS WITH A PYRAZINE SCAFFOLD

12:20 **DOMINIKA CZERWONKA**, ***Adam Mickiewicz University, Poznań***
C20-EPI-AMINO DERIVATIVES OF SALINOMYCIN – THE SCAVENGERS OF CANCER STEM-LIKE CELLS

12:30 **INGRID SUZANA**, ***Sorbonne Université***
SUPRAMOLECULAR ARCHITECTURES: FROM HIGH-SPIN MOLECULES TO SINGLE-MOLECULE MAGNETS

12:40 **MARTYNA MAŃKA**, ***Adam Mickiewicz University, Poznań***
VACUUM-FILTERED SOLUTION-PROCESSED MoS_2 FLAKES FOR FLEXIBLE THIN-FILM VAPOR SENSORS

12:50 **DARIA BRYKCZYŃSKA**, ***Adam Mickiewicz University, Poznań***
THE MULTIFUNCTIONALITY OF COMPLEXES BASED ON HYDRAZONE-TYPE LIGANDS

13:00 **WIKTORIA ADAMSKA**, ***Adam Mickiewicz University, Poznań***
TUNING THE SOLUBILITY OF THE OCTAMERIC NANOCAPSULES FOR SELECTIVE GUEST BINDING AND RELEASE