Consiglio Nazionale delle Ricerche
Istituto di Chimica dei Composti Organometallici (ICCOM)

ALLEGATO B

DICHIARAZIONI SOSTITUTIVE DI CERTIFICAZIONI
(art. 46 D.P.R. n. 445/2000)

DICHIARAZIONI SOSTITUTIVE DELL'ATTO DI NOTORIETÀ
(art. 47 D.P.R. n. 445/2000)

La sottoscritta

COGNOME__KOSTERA_____ **NOME**___SYLWIA ZOFIA_
(per le donne indicare il cognome da nubile)

NATO A: __WOLSZTYN, POLONIA _____ **PROV.**___ Great Poland_____ **IL**__19/04/1988_

ATTUALMENTE RESIDENTE A:_____ **PROV.**_____

INDIRIZZO_____ ____**C.A.P.**_____

TELEFONO_____

Visto il D.P.R. 28 dicembre 2000, n. 445 concernente "T.U. delle disposizioni legislative e regolamentari in materia di documentazione amministrativa" e successive modifiche ed integrazioni;

Vista la Legge 12 novembre 2011, n. 183 ed in particolare l'art. 15 concernente le nuove disposizioni in materia di certificati e dichiarazioni sostitutive *(*)*;

Consapevole che, ai sensi dell'art.76 del DPR 445/2000, le dichiarazioni mendaci, la falsità negli atti e l'uso di atti falsi sono punite ai sensi del Codice penale e delle leggi speciali vigenti in materia, dichiara sotto la propria responsabilità:

che quanto dichiarato nel seguente curriculum vitae et studiorum comprensivo delle informazioni sulla produzione scientifica corrisponde a verità

Curriculum vitae et studiorum

studi compiuti, i titoli conseguiti, le pubblicazioni e/o i rapporti tecnici e/o i brevetti, i servizi prestati, le funzioni svolte, gli incarichi ricoperti ed ogni altra attività scientifica, professionale e didattica eventualmente esercitata **(in ordine cronologico iniziando dal titolo più recente)**

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Education:

1. ***Title description:*** PhD in Chemistry with PhD Thesis*: "Activation of N-H bond in amines by reaction with vinyl substituted silicon compounds via catalyzed ruthenium complex."*
   Date: 20/10/2017
   Released by Adam Mickiewicz University, Poznań (Poland)
   Period of activity *from* 01/10/2013 *to* 25/10/2017

More details: A small library of catalysts were tested for the selective activation of N-H bond in amines. It was observed that the ruthenium-hydride complex $[Ru(H)(Cl)(CO)(PCy_3)_2]$ led to the best results. The reactions proceeded with the formation of olefins as by-products.
Mechanistic studies including catalytic and deuterium labeling experiments using NMR and GC-MS analyses were also discussed.
It was also discovered that the amines redistribute from primaries to secondaries or from secondary to tertiary amines. A mechanism was also proposed for this process.

Skills: Synthesis of Ru catalysts; Characterization by NMR spectroscopy (mainly); Mechanistic studies; Homogeneous catalytic reactions; Schlenk techniques.

2. ***Title description:*** Master`s degree in Chemistry with M. Sc. Thesis: *"Stereoselective synthesis of new πconjugated organic and organosilicon ferrocene derivatives."*
   Date: 27/06/2012 ***Nr:*** 101503
   Released by Adam Mickiewicz University, Poznań (Poland)
   Period of activity *from* 01/10/2010 *to* 25/10/2012

More details: The aim of this research was to optimize the conditions of the catalytics homogeneous reactions such as silylation coupling and Suzuki-Miyaura coupling towards the development of efficient, stereoselective and controlled synthesis routes of new, conjugated molecular and macromolecular organic and organosilicon compounds that are ferrocene derivatives, as well as full spectroscopic characteristics of the compounds obtained. The synthesis of ruthenium (silylation coupling) and palladium (Suzuki-Miyaura coupling) complexes were performed.

Skills: Synthesis of ruthenium and palladium complexes; Characterization by spectroscopic techniques (NMR, GC-MS, GC); Organic synthesis; Homogeneous catalytic reactions; Chromatographic columns.

3. ***Title description:*** Bachelor`s degree in Chemistry with B. Sc. Thesis*: "Application of the silylative coupling and metathesis reactions in the synthesis of organosilicon conjugated polymers."*
   Date: 26/07/2010 ***Nr:*** 81599

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Released by Adam Mickiewicz University, Poznań (Poland)
Period of activity *from* 01/10/2007 *to* 10/07/2010

More details: Catalytic reactions such as olefin sylilation and vinylsilane coupling and Suzuki-Miyaura coupling are widely used in the synthesis of molecular and macromolecular compounds, were described. It was concluded that systems with conjugated multiple bonds that exhibit many interesting photophysical properties were most desirable.

Skills: Literature search; Literature critical review; Thesis compilation.

Work Experience*:*

1. ***Title description:*** Postdoctoral Fellow at ICCOM-CNR Florence, Research Project *„Sintesi e caratterizzazione di catalizzatori molecolari a base di complessi organometallici di metalli di transizione non-nobili" it is part of the project: "Alkaline Membranes and Platinum-free catalysts Enabling innovative, open electRochemical devices for Energy sto rage and conversion - AMPERE" Supervisor:* Luca Gonsalvi (CNR-ICCOM, Italy).
   Date: 18/07/2022 **Nr:** ICCOM/203/2022/FI
   Released by l'Istituto di Chimica dei Composti Organometallici del CNR (ICCOM -CNR)
   Period of activity *from* 01/09/2022 *to* 31/08/2023

More details: The project was concentrated on the synthesize ligands and pincer-type manganese complexes, that were tested as catalysts for the efficient CO_2 hydrogenation. The PNP ligands for Mn-based catalysts were synthesized in multi-step reactions and fully characterized by ^{1}H, ^{13}C, ^{31}P NMR and IR. The application of fully saturated manganese complex able to catalyze the reduction of CO_2 towards HCOOH was tested.

Skills*:* Synthesis of ligands and manganese complexes; Characterization by spectroscopic techniques (NMR, IR); Organometallics synthesis; Schlenk techniques; Multi-task reactions; Optimization of catalytic reaction conditions; Homogeneous catalytic reactions; Use of pressurized gases (including CO_2 and CO_2/H_2).

2. ***Title description:*** Borsa di studio at ICCOM-CNR Florence, Research Project *„Synthesis of manganese complexes for use as catalysts in homogenous and electrocatalytic CO_2 reduction" it is part of the project: "ECCES - Elettrocatalisi per una conversione energetica sostenibile" Supervisor:* Luca Gonsalvi (CNR-ICCOM, Italy).
   Date: 26/07/2021 **Nr:** ICCOM.BS.60-21-FI
   Released by l'Istituto di Chimica dei Composti Organometallici del CNR (ICCOM -CNR)
   Period of activity *from* 01/09/2021 *to* 28/02/2022
   Extension *from* 01/03/2022 *to* 31/08/2022

More details: The project was concentrated on the synthesize pincer-type manganese

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complexes, that were tested as catalysts for the efficient reduction of CO_2 in electrocatalysis and homogeneous catalysis. The pincer-type ligands for Mn-based catalysts were synthesized in multi-step reactions and fully characterize, principally by ^{1}H, ^{13}C, ^{31}P NMR.

***Skills**:* Synthesis of ligands and manganese complexes; Characterization by spectroscopic techniques (NMR, IR); Organometallics synthesis; Schlenk techniques; Optimization of catalytic reaction conditions; Homogeneous catalytic reactions; Use of pressurized gases (including CO_2 and CO_2/H_2).

3. ***Title description:*** Borsa di studio at ICCOM-CNR Florence, Research Project *„Synthesis of manganese complexes for use as catalysts in CO_2 hydrogenation to formate" it is part of the project: ""ORCAS – Organometallic Catalysis for Sustainable chemical synthesis and energy" Supervisor:* Luca Gonsalvi (CNR-ICCOM, Italy).
   Date: 24/02/2021 **Nr:** ICCOM.BS.59-20-FI
   Released by l'Istituto di Chimica dei Composti Organometallici del CNR (ICCOM -CNR)
   Period of activity *from* 01/03/2021 *to* 31/08/2021

More details: Pincer-type ligands based on the 2-[(Ndiisopropylphosphino)amino]pyridine and 2,2'-bis(diisopropylphosphino)-4,4'-ditolylamino scaffolds were synthesized in the multi-task reactions. Manganese complex containing 2-[(Ndiisopropylphosphino)amino]pyridine ligand did not showed good activity towards CO_2 reduction.

***Skills**:* Synthesis of ligands and manganese complexes; Characterization by spectroscopic techniques (NMR, IR); Organometallics synthesis; Schlenk techniques; Multi-task reactions.

4. ***Title description:*** Postdoctoral Fellow at ICCOM-CNR Florence, Research Project *„Sintesi di catalizzatori omogenei a base di metalli non-nobili e loro utilizzo per la conversione di CO_2 a prodotti C1", Supervisor:* Luca Gonsalvi (CNR-ICCOM, Italy).
   Date: 18/12/2019 **Nr:** ICCOM/175/2019/FI
   Released by l'Istituto di Chimica dei Composti Organometallici del CNR (ICCOM -CNR)
   Period of activity *from* 01/01/2020 *to* 31/12/2020

More details: The project was concentrated on the application of efficient manganese complexes able to catalyze the reduction of CO_2 towards HCOOH. The project involved testing of well-defined Mn(I) organometallic complexes as homogeneous catalysts under a pressure of H_2+CO_2, process conditions optimization and mechanistic studies of CO_2 hydrogenation.

***Skills**:* Optimization of catalytic reaction conditions; Characterization by NMR technique (mainly); Schlenk techniques; Mechanistic study; Homogeneous catalytic reactions; Use of pressurized gases (including CO_2 and CO_2/H_2) and steel autoclaves; Use of glove box.

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5. ***Title description:*** Short Term Scientific Missions (STSM) *"Synthesis of earth abundant transition metal complexes for application as selective catalysts in CO_2 hydroboration" Supervisor:* Karl Kirchner (Institute of Applied Synthetic Chemistry - TU Wien, Austria).
   Date: 10/04/2019
   Released by COST European Cooperation in Science and Technology;
   Action: CA15106 - C-H Activation in Organic Synthesis (CHAOS)
   Period of activity *from* 15/04/2019 *to* 30/04/2019

More details: During the 2 weeks of the STSM stay in the Host laboratories, pincer-type ligands, mainly based on the 2,6-diamino-bis(phosphine)pyridyl scaffold were synthesized and characterized. The ligands were applied to coordinate suitable metal precursors to obtain tailored Fe(II) and Mn(I) halidocarbonyl, hydridocarbonyl and polyhydrido-complexes. The catalysts were brought back to the Home lab to be tested in CO_2 catalytic reactions.

Skills*:* Synthesis of ligands and manganese complexes; Characterization by spectroscopic techniques (NMR, IR); Organometallics synthesis; Schlenk techniques.

6. ***Title description:*** Postdoctoral Fellow at ICCOM-CNR Florence, Research Project *„CO_2 as renewable C1 building block by non-noble metal-catalyzed reactions" Supervisor:* Luca Gonsalvi (CNR-ICCOM, Italy).
   Date: 03/12/2018 ***Nr:*** PPN/BEK/2018/1/00138
   Released by NAWA Bekker Programme (Poland*)*, Competition Call Winner
   Period of activity *from* 01/01/2019 *to* 31/12/2019

More details: The aim of the project is the synthesis of efficient non-noble (cheap) transition metal complexes able to catalyze the reduction of CO_2 towards important C1 synthons, to replace expensive and dangerous reagents in selected organic transformations, will be developed. The project has involved catalyst testing, process conditions optimization and mechanistic studies to achieve a better understand of the fundamental aspects underlying the key steps of the catalytic reactions, and in turn design better performing catalysts.

Skills*:* Optimization of catalytic reaction conditions; Characterization by NMR technique (mainly); Schlenk techniques; Mechanistic study; Homogeneous catalytic reactions; Use of pressurized gases (including CO_2 and CO_2/H_2) and steel autoclaves; Use of glove box.

7. ***Title description:*** Postdoctoral Fellow in the Szafert Research Group in Research Project: „Constructing Covalent Organic-Inorganic Frameworks and Non-Covalent Supramolecular Networks Based on Functionalized Cage-like Silsesquioxanes Towards Novel Class of Porous Materials" Supervisor: Łukasz John (UWR, Poland).
   Date: 13/11/2017
   Released by National Science Centre (Poland*)*

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Grant Nr: 2016/23/B/ST5/01480 ***Grant manager:*** Łukasz John (UWR, Poland)
Period of activity *from* 13/11/2017 *to* 31/12/2018

More details: The aim of the project was to develop synthetic strategies for a new class of molecular networks based on functionalized polyhedral oligomeric silsesquioxanes (POSS) for (nano) porous materials resulting in the creation of covalent organic-inorganic structures and non-covalent supramolecular networks.
From the other side, the synthesis of novel mono-functionalized amines-POSS [R^iBu_7-POSS] was performed and applied them as ligands in Pd(II)-based coordination compounds.

Skills: Synthesis of palladium complexes; Characterization by spectroscopic techniques (NMR, MS, IR); Homogeneous catalytic reactions; Schlenk technique; Organic and inorganic synthesis; Crystallization; Porous materials synthesis and characterization.

8. ***Title description:*** Lab demonstration for students at the Adam Mickiewicz University, Poznań.
   Start date: 01/10/2013
   Hours**:** 90 per year
   Period of activity *from* 01/10/2013 *to* 30/06/2017

More details: The activity included the demonstration of laboratory experiments and training of skills to first year Bachelor's students at Adam Mickiewicz University and test evaluation and marking.

Skills: Laboratory risk management; Communication and Collaboration with students; Teaching Skills; Critical Thinking; Laboratory work organization.

9. ***Title description:*** Scholarship from AMU Foundation's.
   Place of work: Faculty of Chemistry UAM
   Period of activity *from* 01/09/2012 *to* 31/09/2013

More details: The activity was based on the synthesis of highly conjugated organic systems applicable in optoelectronics, was made. Catalytic homogeneous reactions such as the Suzuki-Miyaura reaction (Pd complexes) or metathesis (Ru complexes) were used for the synthesis of compounds.

Skills: Catalytic reactions with using ruthenium and palladium complexes; Characterization by spectroscopic techniques (NMR, GC-MS, GC); Organic synthesis; Homogeneous catalytic reactions; Chromatographic columns.

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10. ***Title description:*** Participation in Research Project "*Inorganometallic Catalysis - a new strategy for the synthesis of organometallic reagents, polymers and nanomaterials"* Supervisor: Bogdan Marciniec (UAM, Poland).
Start date: 24/05/2012
Released by National Science Centre (Poland)
Grant Nr: 2011/02/A/ST5/00472 ***Grant manager:*** Bogdan Marciniec (UAM, Poland)
Period of activity *from* 24/05/2012 *to* 20/05/2015

More details: The purpose of this work was to extend the activation reaction of the E'-H bond by demonstrating the occurrence of this process in reactions between amines through vinyl-substituted silicon compounds, i.e. designing and obtaining compounds containing a heteroatom-metalloid connection.

Skills: Optimization of catalytic reaction conditions; Characterization by NMR techniques; Schlenk techniques; Mechanistic studies; Homogeneous catalytic reactions; Organometallics reactions.

11. ***Title description:*** Erasmus Traineeship, Title: *"Design and development of new organometallics for homogeneous catalytic olefin conversion",* Supervisor: Dr Giuliano Giambastani (CNR, ICCOM, Italy).
Start date: 01/10/2015
Released by ERASMUS+
Period of activity *from* 01/10/2015 *to* 31/12/2015

More details: Laboratory experiments had as an objection the synthesis of novel *N*-containing ligands for the preparation of organometallics compounds with potential applications in the field of olefin polymerization and hydroamination. The synthesis and characterization of three new *N*-heterocyclic carbene-conteining ligand, was achieved.

Skills: Ligand synthesis; Multi-task reactions; Characterization by NMR techniques; Schlenk techniques; Organometallics reactions.

12. ***Title description:*** Laboratory assistant in oil mill.
Name of company ADM Szamotuły sp. z o. o.
Period of activity *from* 26/07/2011 *to* 05/09/2011 and *from* 01/09/2010 *to* 30/09/2010

More details: Quality tests of rapeseed oil were conducted, among others on the content of free fatty acids in oil, the purity and water content.

Skills: Analytical Chemistry; ICP; Quality control; Work within a team structure.

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Publications

1. S. Kostera, S. Weber, I. Blaha, M. Peruzzini, K. Kirchner, L. Gonsalvi. *"Base- and Additive-Free Carbon Dioxide Hydroboration to Methoxyboranes Catalyzed by Non-Pincer-Type Mn(I) Complexes." ACS Catal.,* **2023***, 13,* 8, 5236–5244. (**IF** = 13.7)
   Date of publication: 31/03/2023
   Released by American Chemical Society
   DOI: 10.1021/acscatal.3c00020

Abstract: Well-defined, bench stable Mn(I) non-pincer-type complexes were tested as earth-abundant transition metal catalysts for the selective reduction of CO_2 to boryl-protected MeOH in the presence of pinacolborane (HBpin). Essentially, quantitative yields were obtained under mild reaction conditions (1 bar CO_2, 60 °C), without the need of any base or additives, in the presence of the alkylcarbonyl Mn(I) bis(phosphine) complexes *fac*-[Mn($CH_2CH_2CH_3$)(dippe)($CO)_3$] [Mn1, dippe = 1,2-bis(di*iso*propylphosphino)ethane] and [Mn(dippe)$(CO)_2${(μ-H)$_2$(Bpin)}] (Mn4), that is obtained by reaction of the bench-stable precatalyst Mn1 with HBpin via elimination of butanal. Preliminary mechanistic details were obtained by a combination of NMR experiments and monitoring of the catalytic reactions.

2. S. Kostera, S. Weber, M. Peruzzini, L. F. Veiros, K. Kirchner, L. Gonsalvi. *"Carbon Dioxide Hydrogenation to Formate Catalyzed by a Bench-Stable, Non-Pincer Type Mn(I) Alkylcarbonyl Complex." Organometallics*, **2021**, *40*, 9, 1213–1220. (**IF** = 3.837)
   Date of publication: 20/04/2021
   Released by American Chemical Society
   DOI: 10.1021/acs.organomet.0c00710

Abstract: The catalytic reduction of carbon dioxide is a process of growing interest for the use of this simple and abundant molecule as renewable building block in C1-chemical synthesis and for hydrogen storage. The well-defined, bench-stable alkylcarbonyl Mn(I) bis(phosphine) complex *fac*-[Mn($CH_2CH_2CH_3$)(dippe)($CO)_3$] [dippe = 1,2-bis(di*iso*propylphosphino)ethane] was tested as efficient and selective non-precious metal pre-catalyst for the hydrogenation of CO_2 to formate under mild conditions (75 bar total pressure, 80 °C), in the presence of a Lewis acid co-catalyst (LiOTf) and base (DBU). The screening of the reaction parameters showed the importance of the gas mixture composition, and that an optimal H_2/CO_2 = 2:1 ratio must be used to obtain higher turnovers. Mechanistic insight into the catalytic reaction is provided by means of DFT calculations.

3. L. Gonsalvi, A. Guerriero, S. Kostera. *"Homogeneously Catalyzed CO_2 Hydrogenation to Formic Acid/Formate with Non-Precious Metal Catalysts."* Chapter 3 in CO_2 Hydrogenation Catalysis (Ed. Himeda, Y.).
   Date of publication: 1. Edition March 2021

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Released by Wiley-VCH, Weinheim, Germany
ISBN: 978-3-527-34663-9

Abstract: In this chapter, the main results described in the literature for CO_2 hydrogenation to formic acid and formates, using non-precious (mainly first-row) transition metals, are summarized. Particular attention is given to illustrate the different classes of homogeneous catalysts and principal stabilizing ligands, explaining their advantages and effects in bringing about the efficient and selective 2-electron reduction of CO_2 (or bicarbonate) to HCOOH (or formate) using hydrogen gas, showing their potential for the future replacement of low-abundant, precious Platinum Group metal catalysts.

4. S. Kostera, M. Peruzzini, L. Gonsalvi, *„Recent Advances in Metal Catalyst Design for CO_2 Hydroboration to C1 Derivatives." Catalysts,* **2021**, *11* (1), 58. (**IF** = 4.13)
   Date of publication: 02/01/2021
   Released by MDPI
   DOI: 10.3390/catal11010058

Abstract: The use of CO_2 as a C1 building block for chemical synthesis is receiving growing attention, due to the potential of this simple molecule as an abundant and cheap renewable feedstock. Among the possible reductants used in the literature to bring about CO_2 reduction to C1 derivatives, hydroboranes have found various applications, in the presence of suitable homogenous catalysts. The current minireview article summarizes the main results obtained since 2016 in the synthetic design of main group, first and second row transition metals for use as catalysts for CO_2 hydroboration.

5. S. Kostera, M. Peruzzini, K. Kirchner, L. Gonsalvi, *„Mild and Selective Carbon Dioxide Hydroboration to Methoxyboranes Catalyzed by Mn(I) PNP Pincer Complexes." ChemCatChem*, **2020**, *12*, 18, 4625-4631. (**IF =** 5.686)
   Date of publication: 18/09/2020
   Released by Wiley
   DOI: 10.1002/cctc.202000469

Abstract: Well-defined Mn(I)-PNP pincer-type complexes were tested as non-precious transition metal catalysts for the selective reduction of CO_2 to boryl-protected MeOH in the presence of hydroboranes (HBpin, 9-BBN) and borates as Lewis acids (LA) additives. The best performance was obtained under mild reaction conditions (1 bar CO_2, 60 °C) in the presence of the hydridocarbonyl complex $[MnH(PNP^{NH}\text{–}^{i}Pr)(CO)_2]$ and $B(OPh)_3$ as co-catalyst. Preliminary mechanistic studies suggest that the initial activation step may occur by cationization of the metal center by the strong LA, and that both metal-catalyzed and metal-free steps are present in the overall catalytic system.

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6. K. Piec, S. Kostera, D. Jędrzkiewicz, J. Ejfler, Ł. John, *„Mono-substituted amine-oligosilsesquioxanes as functional tools in Pd(II) coordination chemistry: synthesis and properties." New J. Chem.*, **2020**, *44,* 10786-10795. (**IF =** 3.591)
Date of publication: 21/05/2020
Released by RCS
DOI: 10.1039/D0NJ01568G

Abstract: Among the broad palette of POSS hybrids, the mono-functionalized ones can be considered as attractive starting blocks for further structural expansion. In this paper, we report on the poorly known group represented by N-containing derivatives which have great potential in many areas of organic and coordination chemistry. By using Buchwald–Hartwig amination, and starting from (3-aminopropyl)hepta(*iso*butyl)octasilsesquioxane and different aryl bromides, we obtained eight novel mono-substituted amine-POSS derivatives *via* C(sp^2)–N bond creation. In the next step, selected hybrids were used in metalation reactions by using palladium acetate. The driving force of this reaction is the formation of the metallacycle entity possessing the {Pd[N–H···O–C–O]} core, which is built by POSS attached amine fragments and acetate ligands, which points to a non-typical behavior in comparison to the conventional reaction between $Pd(OAc)_2$ and classical amines. The resulting coordination entities show very good solubility, which is not always possible with fully substituted POSS ligands and, which should be emphasized, is strongly demanded in potential applications, *e.g.* in catalysis. Herein, we report on the first palladium compounds containing mono-functionalized amine-POSS ligands, with a pseudochelate interaction stabilized by a hydrogen bond. For a detailed picture of the stability of the chelate rings maintained by hydrogen bonds, DFT calculations were carried out. Furthermore, the preliminary catalytic behavior of the resulting Pd(II) coordination compounds has been examined in the Suzuki–Miyaura coupling. All the obtained compounds were characterized by using EA, NMR (^{1}H, ^{13}C, ^{29}Si), and HR-MS.

7. *Ćwiczenia laboratoryjne z podstaw chemii nieorganicznej* editing by Beata Dudziec
***Date of publication:* 2017**, Poznań
Released by Wydawnictwo Nauka i Innowacje sp. z o.o.,
ISBN: 978-83-64864-80-3

More details: A text book containing exercises and the theory of inorganic chemistry necessary to complete the exercises during laboratories of inorganic chemistry for the students of first year of Bachelor`s at Adam Mickiewicz University.

8. S. Kostera, B. Wyrzykiewicz, P. Pawluć, B. Marciniec, *„Ruthenium-catalyzed deaminative redistribution of primary and secondary amines." Dalton Trans.,* **2017**, *46* (35), 11552 – 11555. (**IF =** 4.15)
Date of publication: 07/08/2017

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Released by RSC
Period of activity *from* 07/06/2017 *to* 04/08/2017
DOI: 10.1039/C7DT02470C

Abstract: A ruthenium–hydride complex, [Ru(H)(Cl)(CO)(PCy_3)$_2$], was found to be active in the highly selective redistribution of primary and secondary amines bearing an α-hydrogen atom. This new deaminative coupling of amines enables the highly selective synthesis of secondary amines from primary amines and of tertiary amines from secondary amines with the evolution of ammonia. A preliminary mechanistic view of this novel reaction based on catalytic experiments using NMR methods confirms the synthetic observations.

9. M. Majchrzak, S. Kostera, M. Grzelak, B. Marciniec and M. Kubicki, *„An efficient catalytic synthesis and characterization of new styryl-ferrocenes and their trans-π-conjugated organosilicon materials." RSC Adv*., **2016**, *6*, 39947 – 39954. (**IF =** 3.108)
Date of publication: 11/04/2016
Released by RCS
Period of activity *from* 11/01/2016 *to* 07/04/2016
DOI: 10.1039/C6RA00859C

Abstract: A selective and efficient catalytic method was developed for the synthesis of new styryl-conjugated silyl-ferrocene materials. The use of an effective palladium catalytic system [Pd(η^2-dba)(P(*o*-tolyl)$_3$)$_2$] with a K_3PO_4 base solution allowed us to obtain new, reactive ferrocene olefins which can be used in various applications. In addition, using the stereo-control silylative coupling reaction we received unique new organosilicon *trans*-vinylene products with a built-in metallocene.

10. B. Marciniec, S. Kostera, B. Wyrzykiewicz and P. Pawluć, *„Ruthenium-catalyzed dealkenative N-silylation of amines by substituted vinylsilanes." Dalton Trans*., **2015**, *44*, 782 – 786. (**IF =** 4.177)
Date of publication: 06/11/2014
Released by RSC
Period of activity *from* 07/10/2014 *to* 05/11/2014
DOI: 10.1039/C4DT03084B

Abstract: The ruthenium hydride complex-catalyzed *N*-silylation of primary and secondary amines with substituted vinylsilanes, with the general formula $R^1CH{=}CHSiR'_3$ (where R^1 = H, Ph, *n*-Bu, $Si(OEt)_3$), leading to the formation of a Si–N bond with the evolution of olefin is described. Vinylsilane acts as a silylative reagent and hydrogen acceptor. Under optimum conditions, the reaction offers an attractive route for the synthesis of silylamines. The preliminary mechanistic view of this novel general silylation reaction based on catalytic and deuterium labeling experiments, using NMR and GC-MS methods, confirm the synthetic observations.

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11. M. Majchrzak, M. Hybsz, S. Kostera, M. Kubicki, B. Marciniec, *„A highly stereoselective synthesis of new styryl-π-conjugate organosilicon compounds." Tetrahedron Lett.,* **2014**, *55*, 3055 – 3058. (**IF =** 2.379)
Date of publication: 05/04/2014
Released by ELSEVIER
Period of activity *from* 01/12/2013 *to* 27/03/2014
DOI: 10.1016/j.tetlet.2014.03.119

Abstract: This work describes very precise and controlled catalytic transformations as useful tools for the synthesis of new *trans*-π-conjugated molecular and macromolecular organosilicon compounds. Several distyryl-arenes were obtained efficiently via silylative coupling in high yields and with excellent selectivity for new *E*,*E*-bis(silyl)arenes.

12. M. Majchrzak, S. Kostera, M. Kubicki and I. Kownacki, *"Synthesis of new styrylarenes via Suzuki–Miyaura coupling catalyzed by highly active, well-defined palladium catalysts." Dalton Trans.*, **2013**, *42*, 15535 – 15539. (**IF =** 4.097)
Date of publication: 12/08/2013
Released by RCS
Period of activity *from* 30/07/2013 *to* 09/08/2013
DOI: 10.1039/C3DT52063C

Abstract: An efficient synthetic route for well-defined palladium(0) complexes [Pd(η^2-dba)(PPh_3)$_2$], [Pd(η^2-dba)(PCy_3)$_2$] and their crystallographic structures is reported. This is the first crystallographic characterization of palladium complexes coordinated with one dibenzylideneacetone and two phosphines. A highly effective, fully controlled method for selective synthesis of mono- and distyrylarenes *via* Suzuki–Miyaura coupling is described.

13. *XXXVI Ogólnopolska Szkoła Chemii U źródeł nauki* editing by Magdalena Ligia Naurecka
Date of publication: 28/04/2012 ***Location:*** Sosnowiec, Poland
Released by Acclaim Studio Paweł Buchaniec
ISBN: 9788363311988

More details: Book of abstracts conference: XXXVI Ogólnopolska Szkoła Chemii eng.: 36th Polish School of Chemistry (28/04/2012-03/05/2012, Rynia, Poland).

Awards:

1. Award for the best poster*;* Title: *"Activation of N-H bond by substituted vinylsilanes – new silylamines synthesis."*

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Date: 31/08/2016
Conference name: 8th European Silicon Days
Duration of the conference *from* 28/08/2016 *to* 31/08/2016
Location: Poznań, Poland
Released by: Chairman of 8th European Silicon Days

2. Award for social and organizational activity as part of the chemist's science club at the Faculty of Chemistry, UAM.
Date: 13/05/2012
Released by: Dean of the chemistry department, Adam Mickiewicz University

3. The third prize for the oral presentation; Title*: "Zastosowanie reakcji katalitycznych w celu uzyskania nowych organicznych i krzemoorganicznych pochodnych ferrocenu" eng.: „Application of catalytic reactions to obtain new organic and organosilicon ferrocene derivatives."*
Conference name: X Sympozjum Naukowego Stowarzyszenia Chemików eng.: 10th Symposium of Scientific Association of Chemists
Duration of the conference *from* 22/03/2012 *to* 25/03/2012
Location: Jeziory, Poland
Date: 25/03/2012
Released by: Chairman of 10th Symposium of Scientific Association of Chemists

4. *The third prize for the poster presentation; Title: "Zastosowanie reakcji katalitycznych w celu uzyskania nowych organicznych i krzemoorganicznych pochodnych ferrocenu" eng.: „Application of catalytic reactions to obtain new organic and organosilicon ferrocene derivatives."*
Conference name: XXXVI Ogólnopolska Szkoła Chemii eng.: 36th Polish School of Chemistry
Duration of the conference *from* 28/04/2012 *to* 03/05/2012
Location: Rynia, Poland
Date: 02/05/2012
Released by: Chairman of 36th Polish School of Chemistry

5. The second prize for the poster presentation; Title*: "Katalityczne metody otrzymywania wysoce sprzężonych układów organicznych" eng.: „Catalytic methods for obtaining highly conjugated organic systems."*
Conference name: XXXV Ogólnopolska Szkoła Chemii eng. *35th Polish School of Chemistry*
Duration of the conference *from 9/11/2011 to 13/11/2011*

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Location: *Karpicko, Poland*
Date: 12/11/2011
Released by: Chairman of 35th Polish School of Chemistry

6. The first prize for the poster presentation; Title: *"Badanie wpływu pestycydów na środowisko" eng. "Study on the environmental impact of pesticides."*
Conference name: XXX Ogólnopolska Szkoła Chemii eng**.:** 30th Polish School of Chemistry
Duration of the conference *from* 30/04/2009 *to* 04/05/2009
Location: Przesieka, Poland
Date: 03/05/2009
Released by: Chairman of 30th Polish School of Chemistry

Conferences:

A. Oral presentations:

1. S. Kostera, B. Marciniec, B. Wyrzykiewicz, P. Pawluć*, „New ruthenium-catalyzed N-silylation of amines by vinylsilanes."*
Conference name: XV International Seminar of PhD-Students on Organometallic and Coordination Chemistry
Duration of the conference *from* 05/04/2014 *to* 09/04/2014
Location: Świeradów Zdrój, Poland
Published by Uniwersytet Wrocławski as post-conference publication

2. *S. Kostera, M. Majchrzak, B. Marciniec "Zastosowanie reakcji katalitycznych w celu uzyskania nowych organicznych i krzemoorganicznych pochodnych ferrocenu" eng.: „Application of catalytic reactions to obtain new organic and organosilicon ferrocene derivatives."*
Conference name: X Sympozjum Naukowego Stowarzyszenia Chemików eng.: 10th Symposium of Scientific Association of Chemists
Duration of the conference *from* 22/03/2012 *to* 25/03/2012
Location: Jeziory, Poland

B. Poster presentations:

1. S. Kostera, S. Weber, M. Peruzzini, L. F. Veiros, K. Kirchner, L. Gonsalvi. "Carbon Dioxide Hydrogenation to Formate Catalyzed by Non-Pincer Type Mn(I) Complex."
Conference name: 44th International Conference on Coordination Chemistry
Duration of the conference from 28/08/2022 to 02/09/2022

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Location: Rimini, Itay

2. S. Kostera, B. Wyrzykiewicz, P. Pawluć, B. Marciniec, *„Ruthenium-catalyzed deaminative redistribution of primary and secondary amines."*
Conference name: International Symposium on Synthesis and Catalysis
Duration of the conference *from* 05/09/2017 *to* 08/09/2017
***Location*:** Evora, Portugal

3. S. Kostera, B. Marciniec, B. Wyrzykiewicz, P. Pawluć, *„New catalytic activation of N-H bond by substituted vinylsilanes."*
Conference name: XXXIV GEQO Congress Organometallic Chemistry Group
Duration of the conference *from* 07/09/2016 *to* 09/09/2016
***Location*:** Girona, Spain
Published by Spanish Royal Society of Chemistry as post-conference publication

4. S. Kostera, B. Marciniec, B. Wyrzykiewicz, P. Pawluć, *„Activation of N-H Bond by Substituted Vinylsilanes - New Silylamines Synthesis."*
Conference name: 8th European Silicon Days
Duration of the conference *from* 28/08/2016 *to* 31/08/2016
Location: Poznań, Poland
Published by Wielkopolskie Centrum Zaawansowanych Technologii as post-conference publication

5. S. Kostera, B. Marciniec, B. Wyrzykiewicz, P. Pawluć, *„Aktywacja wiązania N-H w reakcji pierwszo- i drugorzędowych amin z sililoetenami."*
Conference name: I Poznańskie Sympozjum Młodych Naukowców. Nowe Oblicze Nauk Przyrodniczych
Duration of the conference 15/11/2014
Location: Poznań, Poland
Published by UAM as post-conference publication

6. S. Kostera, B. Marciniec, B. Wyrzykiewicz, P. Pawluć, *„Ruthenium-catalyzed dealkenative N-silylation of amines by substituted vinylsilanes."*
Conference name: The 17th International Symposium on Silicon Chemistry jointly with the 7th European Silicon Days
Duration of the conference *from* 03/08/2014 *to* 08/08/2014
Location: Berlin, Germany
Published by Technische Universität Berlin as post-conference publication

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7. B. Marciniec, P. Pawluć, S. Kostera, B. Wyrzykiewicz *"New Ruthenium-catalyzed N-silylation of Amines by Substituted Vinylsilanes."*
Conference name: 19th International Symposium on Homogeneous Catalysis (ISHC-XIX)
Duration of the conference *from* 06/07/2014 *to* 11/07/2014
Published by University of Ottawa as post-conference publication

8. Marciniec, P. Pawluć, J. Walkowiak, D. Frąckowiak, S. Kostera*, „Catalytic coupling of heteroatom (O, N)-hydrogen bond with vinylmetalloid compounds."*
Conference name: 20th EuCheMs Conference on organometallic Chemistry
Duration of the conference *from* 30/06/2013 *to* 04/07/2013
Location: St Andrews, Scotland
Published by University of St Andrews post-conference publication

9. M. Majchrzak, S. Kostera, B. Marciniec*, „Highly stereoselective synthesis of New styrolconjugated compounds via catalytic transformation."*
Conference name: 18th International Symposium on Homogenous Catalysis (ISHC-18)
Duration of the conference *from* 09/07/2012 *to* 12/07/2012
Location: Toulouse, France

10. S. Kostera, M. Majchrzak, B. Marciniec *"Zastosowanie reakcji katalitycznych w celu uzyskania nowych organicznych i krzemoorganicznych pochodnych ferrocenu" eng.: „Application of catalytic reactions to obtain new organic and organosilicon ferrocene derivatives."*
Conference name: XXXVI Ogólnopolska Szkoła Chemii eng.: 36th Polish School of Chemistry
Duration of the conference *from* 28/04/2012 *to* 03/05/2012
Location: Rynia, Poland

11. M. Majchrzak, S. Kostera, B. Marciniec*, „Stereoselektywna synteza nowych sprzężonych styrylopochodnych związków organicznych i krzemoorganicznych."*
Conference name: Materiały i Biomateriały, Konferencja środowiskowa
Duration of the conference *from 28/11/2011 to 29/11/2011*
Location: Poznań, Poland

12. M. Majchrzak, S. Kostera, B. Marciniec, *„Synthesis and properties of New well-defined polymeric materials exo-N-(alkyl/arylene)norbornene-5,6-dicarboxyimide derivatives."*

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Conference name: International Conference on Advanced Polymers via Macromolecular Engineering (APME 2011- IUPAC 9th)
Duration of the conference *from* 05/08/2011 *to* 08/09/2011
Location: Cappadocia, Turkey

13. M. Majchrzak, S. Kostera, B. Marciniec*, „Novel polymeric materials prepared via ROMP of exo-N-(alkyl/arylene)norbornene-5,6-dicarboxyimides."*
Conference name: ISOM XIX
Duration of the conference *from* 10/07/2011 *to* 15/07/2011
Location: Rennes*,* France

14. *S. Kostera, M. Majchrzak, B. Marciniec "Katalityczne metody otrzymywania wysoce sprzężonych układów organicznych." eng.: „Catalytic methods for obtaining highly conjugated organic systems."*
Conference name: XXXV Ogólnopolska Szkoła Chemii eng. *35th Polish School of Chemistry*
Duration of the conference *from 9/11/2011 to 13/11/2011*
Location: *Karpicko, Poland*

15. S. Kostera, A. Luther, A. Nowak *"Badanie wpływu pestycydów na środowisko." eng. "Study on the environmental impact of pesticides."*
Conference name: XXX Ogólnopolska Szkoła Chemii eng***.:*** 30th Polish School of Chemistry
Duration of the conference *from* 30/04/2009 *to* 04/05/2009
Location: Przesieka, Poland

Other activities:

- Certified Internal Auditor Course Management Systems in a research laboratory According to PN EN ISO / IED 17025:2005
- Certificate for the Italian Language, Level A2
- Member of Scientific Chemists' Club UAM (2008-2012)
- Elected as vice president of the Scientific Chemists' Club (2011-2012) at Adam Mickiewicz University, Faculty of Chemistry
- Participation in organizing chemical shows for primary and secondary schools with the Scientific Chemists' Club
- Training course (1 day) on the safety regulations and use of pressurized gases and cylinders (05/11/2019)

Training course (1 day) for workers of the CNR Institutes on the risks of exposure to chemical, carcinogenic, mutagenic and biological agents (specific training) (7572031.7572032) (10/07/2023)

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